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THE RECOGNITION AND PROGNOSIS OF THE VARIOUS TYPES OF HEART BLOCK.* †

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The investigation of heart block was initiated one hundred and sixty-seven years ago when Morgagni[1] recorded two cases of "epilepsy with slow pulse". The study of this disorder was temporarily suspended for nearly seven decades. Burnet,[1] Adams,[1] Holberton,[1] Stokes[1] and others then devoted a part of their time to the description of certain instances of "apoplectic attacks" with slow pulse. This continued over a period of a half century when Galabin (1875)[2] first described human heart block with tracings. Finally, on the verge of the twentieth century (1899), Wenkebach[2] and His[2] suggested a lesion of the A-V bundle as the cause of heart block in man. During the year 1927 there were fifty-seven contributions to various aspects of this subject.

We have seen during the past five years, seventeen instances of partial heart block, two of complete heart block, eight of intraventricular block and two of "sino-auricular" block, all having galvanometer curves typical of their respective types. For example, the electrocardiograms of the partial heart block cases showed PR intervals of .22 sec., or more, and in only two instances was digitalis a possible cause of the delayed conduction; the curves from the intraventricular block patients were typical[3, 4] except for two cases which perhaps approached the so-called "arborization" type of block. These had so great a widening of the QRS interval however, that there seemed to be no question of bundle branch block.[3] The two instances of complete heart block showed absolute dissociation of auricular and ventricular contractions. The sino-auricular block patients presented curves with the occasional loss of a single heart beat and the absence of both auricular and ventricular activity during one cycle.

While an instrument of precision has been used to collect this little group of heart block cases for study, it is not our intention to further dilate upon the electrocardiogram but to employ the clinical data and follow-up records in a discussion of the detection and more particularly the prognosis of heart block.

I. Detection

Partial heart block is not regularly detected by physical signs alone. Three of the seventeen cases were thus discovered and fourteen were found by the galvanometer. The ventricular rate usually ranges between 40 and 60 per minute. In our series it was repeatedly found to be between 40 and 100 per minute. Bradycardia, sometimes a helpful indicator, does not necessarily occur except where there are dropped beats either of a single nature or giving the 2:1 and 3:1 type of A-V block. A simple prolongation of the A-V interval is not generally perceived clinically. Reduplication of the first sound, apparently due to an audible auricular contraction, came to our attention in only one case. As a result of the more frequent contractions of the auricle in certain cases of partial heart block, the presystolic thrill and murmur of mitral stenosis may be changed to an earlier position in diastole. This was noted twice by us. The symptoms and other physical signs may be those of early or late cardiac defeat, while frequently neither signs nor symptoms exist and the discovery of the partial heart block is accidental following routine electrocardiogram. The occasional complete absence of a single ventricular beat or the so-called "dropped beat" is the best clinical evidence of partial heart block (see Fig. 1). This phenomenon generally disappears with an increased heart rate following exercise and in this respect may be confused with the irregularity occasioned by ectopic beats which also disappear with tachycardia following exercise. The inaudible or faintly audible premature beat is perhaps the most

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frequent masquerader leading to a false diagnosis of partial heart block.

Complete heart block has as its most common and important sign a very slow pulse rate; the ventricle generally beating in the region of 35 per minute. The importance of prominent venous pulsation in the neck. It has been said that the contraction of the auricle may be heard in the long diastolic pauses occurring in complete block. Contraction of the auricle sometimes causes a visible pulsation in the veins of the neck, constituting

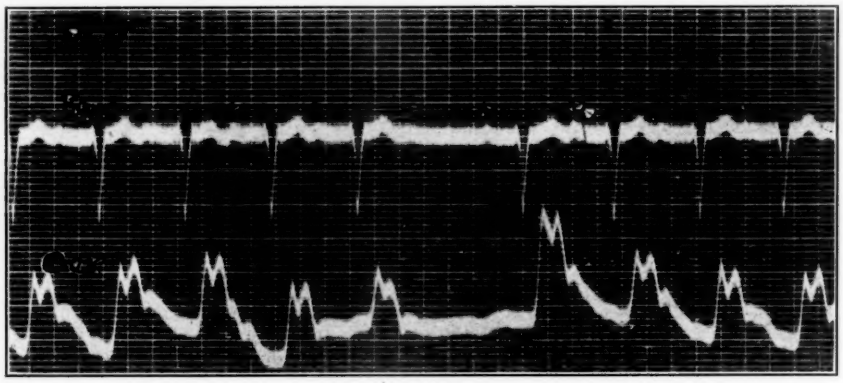

Fig. 1.—Simultaneous electrocardiographic and arterial (carotid) tracing, showing "dropped" beat of partial A-V block.

accurately ascertaining the ventricular rate by listening carefully with a stethoscope at the apex of the heart is well illustrated by the double tracing of Fig. 2. Here it can be seen that the pulse is quite slow due to failure of the premature beats to propagate a perceptible arterial wave. This gives a slow regular pulse a valuable but too infrequently employed sign in ascertaining the relation of the auricular to the ventricular rate of contraction. All of these more particular physical signs of partial and complete heart block require accurate observation combined with a persistently careful examination. Our own tendency has been

Fig. 2.—Simultaneous electrocardiographic and arterial (carotid) tracing. The alternate ventricular premature beats fail to propagate a palpable arterial wave, the pulse rate being one-half the ventricular rate.

when auscultation at the apex reveals the true nature of the disturbance. In complete heart block, according to Lewis,[6] the first heart sound becomes intensified at intervals when the auricular and ventricular contractions begin together. At such a time there is also a to depend too much upon the galvanometer and we believe this attitude is unfortunately becoming more widespread.

A history of the time-honored Stokes-Adams syndrome may be elicited in about 25 per cent[11] of complete heart block cases. Frequently ac-

counts of unusual "fainting spells" during the fourth, fifth and sixth decades may lead to a fruitful investigation of the conduction system. If the ventricular rate falls as low as 8 to 20 beats per minute,[6] the features of cerebral anemia result. There is pallor, cyanosis, dizziness, mental confusion, stertorous breathing, twitching of the muscles of the face or limbs and in some instances actual convulsions. In individual cases these vary in number, intensity and frequency and may or may not be related to exercise. The patient seldom bites the tongue nor does he void involuntarily during the attack.

Further aids in the diagnosis of complete block are: the comparison of the venous with the arterial pulsations in the neck most illustriously shown by polygraphic tracings. The electrocardiogram and polygram, though not absolutely necessary for the recognition of this condition, offer infallible means of clinching the diagnosis, the former being much the easier to interpret. Atropine, nitrites, and exercise seldom cause an alteration of the ventricular rate. The systolic blood pressure is usually high and the diastolic low. Other general symptoms may arise from the inefficiency of the heart musculature.

In the past fifteen years much interest has been manifested in the study of intraventricular heart block as to etiology, clinical recognition and prognosis. The delayed contraction of one of the ventricles, causing asynchronism of action, may give rise to interesting clinical signs. J. D. King[5] of Baltimore recently studied the physical signs in this type of block. He groups (1) a visible bifid cardiac apex thrust, (2) a palpable bifid apex thrust and (3) feeble heart sounds with a sound and murmur accompanying the two elements of the thrust, as a triad of signs some 70 per cent valuable in the diagnosis of bundle-branch block. Only in four of the one hundred cases under study were these signs present with the absence of bundle-branch block. He found the diagnosis difficult in the presence of gallop rhythm. A cloth thrown over the chest and a combination of palpation and percussion have been recommended to bring out the double apex thrust.

No cases of this type have come under our observation since the publication of King's article. Although no specific description of the apex thrust appears in our records it may be of interest to note reduplicated first and second sounds in four of our eight cases and gallop rhythm in one. Four of the cases showed auricular fibrillation, six showed apical systolic murmurs of no diagnostic value and seven cardiac hypertrophy; two had anginal and five congestive heart failure. The diagnosis of intraventricular block in our series was made only by electrocardiogram.

"Sino-auricular block" is rare, has very little clinical significance and presents no characteristic signs or symptoms. It occurs in otherwise normal hearts or with heart disease of any grade. There may be slight preparatory quickening of the heart rate, followed by a pause equivalent to approximately two normal cardiac cycles. Graphically, the "P" or "a" wave may be entirely lacking. These "dropped beats" may occur singly or in groups. It may be difficult to distinguish from (1) the long pauses, accompanying inaudible premature beats, (2) blocked premature auricular contractions, (3) occasional "dropped beats" of A-V block, (4) sinus arhythmia, and (5) sinus bradycardia. S-A block is nearly always diagnosed after electrocardiographic tracings have been made.

II. Prognosis

A discussion of the prognosis of heart block involves the consideration of many factors, including the age of the patient, the etiology of the heart trouble, the duration of the affection and the functional state of the heart muscle at the time of examination. Naturally we can find no rule to adequately sum up the prognosis in any or all types of heart block nor can we discuss abstractly the interrelation of the factors mentioned as this varies with each case. However, from this rather complicated problem, it seems fairly clear that heart block (with the possible exception of "sino-auricular" block) generally indicates damage to the heart muscle outside of the conduction system as well as somewhere in it. Due account must be taken of the so-called functional disturbances of the conduction system attributable to overactivity of the vagus, certain intoxications and infections. Finally then, it is not the arhythmia that is responsible for the modified outlook in these cases but the inability of the myocardium to meet the demands of disease.

In an attempt to clarify the prognostic outlook for patients with heart block we have

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tabulated a number of records appearing in the literature mainly of the past twelve years. Congenital heart block has been left out of consideration. Table I contains data derived from case histories of heart block having instrumental proof of the mechanism. Numerous difficulties have been encountered and numbers of case reports have been found to be valueless because of the uncertainty often connected with the outcome of the case. However, Table I represents certain tendencies perhaps of value. For example, in seventy cases heart block at the age of sixty, according to his family, maintained a pulse of 30 to 35 for thirty-five years. Vaquez[8] chronicles a male patient of eighty-eight with a pulse of 24 for fifteen years. Russell-Wells and Wiltshire[9] described in 1922 a history of a man with intermittent complete block and a normal rhythm extending over a period of twelve years. Willius[10] contributes a case with a history of complete block for fifteen years.

There are no striking figures to be obtained from the columns representing the transient

TABLE I.
Prognosis in 515 Cases of Heart Block—From Literature.

Type	Number Cases	Number Followed	Prognosis in 1 Year Periods									Ages	Cardiac Deaths	Remarks on Others
			½	1	2	3	4	5	6	7	8	Over 8 Years			
Transient	19	19	3−	2+						1+			30−75	2	All others (13) recovered or changed to phb. in a few days
COMPLETE A-V															
Permanent	104	70	11− 1+	22− 1+	2− 2+	5− 8+		5+			10−* 1+	1 living at 15 years 1 living at 10 years	6−91	40	9 under 40 years of age
PARTIAL A-V	155	126	2− 19+			2+	1+				21+* 47−*		12−79	49	34 recovered from 1 day to 4 months after discovery
INTRA-VENTRICULAR	393	285	60− 12+	116− 46+	35− 2+	3− 4+	2− 2+	1+		1+		1+ (9 years)	15−81	43 146	
SINO-AURICULAR	42	15	1+d	1+c 1+a				1+b					7−79	0	11 cases "transient" without effect on life

Minus Sign (−) Dead. Plus Sign (+) Alive when last traced.
(a) Block disappeared in one year. *Not clear that heart block had been present 8 years in all of these cases.
(b) Block still present.
(c) Block present at end of fourteen months.
(d) Block disappeared in twenty-eight days.

of proved (electrocardiogram) complete heart block 57 per cent (forty cases) had succumbed within three years. Eighty per cent of all the deaths in this group were of a cardiac type.

It is only fair to note a few rather striking exceptions to the impresson just given. Lewis[6] writes of a man of thirty-three with complete heart block and a heart rate of 30 who was very active and athletic for fifteen years. Hirschfelder's[7] patient, showing complete

complete and partial A-V block case histories. No heavy death toll occurs in this group in the first few years following their discovery. Forty-seven patients of one study[11] were found to be dead within the eight year period. However, the data compiled in Table I seems to be sadly lacking in an adequate representation of this group and we are inclined to believe that a larger series would show a higher mortality in the early years following discovery. Partial heart block is so frequently found in

both arteriosclerotic and rheumatic heart disease that we cannot explain the failure of the literature to indicate a more serious outlook. The literature is full of examples of partial heart block but contains relatively little concerning the eventual outcome of the cases described.

The intraventricular or the bundle-branch cases show the most decided tendency to death shortly after discovery. Of the 285 patients having galvanometer curves typical of this condition 61 per cent (176 cases) died within one year and 74 per cent within two years after discovery. Granting that 67 per cent of all deaths in this group (and perhaps 87 per cent) died a cardiac death, it is very evident that intraventricular block carries with it a decidedly unfavorable outlook.

Little comment need be made upon the tabulations concerning "sino-auricular" block. Certainly, no generalized deduction of value can be drawn from the quoted figures and general opinion indicates that this type of cardiac arhythmia has no particular prognostic significance.

We have been greatly impressed with the difficulties involved in attempting to derive any very sound rules for prognosis in heart block from the use of the statistical method. Although the prognosis of a given case must be derived from an individual standpoint, still it seems worth while to record the findings accumulated from the study of our own cases and to collect comparable data in so far as possible of a uniform nature.

The outstanding facts concerning our cases appear in Table II. As already stated questionable instances of partial heart block and the so-called "incomplete" bundle-branch block cases have been left out of consideration. In the preceding and succeeding discussion a separate grouping of patients with more than one type of heart block has been avoided. In Table II, for example, instances of combined partial A-V and intraventricular block appear under the latter heading, which is assumed to be the more important of the two. No other conflicts occur in our tabulation. The individual types of block are represented by too small a number of cases for separate and convincing comment. Our experience obviously has been largely confined to the instances of heart block already showing evidences of circulatory difficulty. For example, seventeen of the twenty-nine patients had congestive heart failure. Furthermore, fourteen of the total group succumbed with the cardiac type of death. The heaviest death rate occurred in

TABLE II.
Showing Etiology and Prognosis in Twenty-Nine Cases of Heart Block.

TYPE OF BLOCK	Etiology	No. Cases	Male	Female	Age Groups 10 to 20	Age Groups 20 to 40	Age Groups 40+	Heart Failure Ang.	Heart Failure Cong.	Prognosis in ½ Yr. Periods ½	1	1½	2	2½	3	3½	4	4½	Cardiac Deaths
PARTIAL	A	8	6	2			8	1	4	3− 1+	1+	1− 1+						1+	2
	R	6	3	3	3	1	2		5	1−			2−				2+	1+	3
	S*	3	3				3	2	1	1−									1
Total		17	12	5	3	1	13	3	10	5− 1+	1+	1− 1+	2−				2+	2+	6
COMPLETE	A	2		2			2		1	1−			1+						1
INTRA-VENTRICULAR	A	8	7	1			8	2	5	2−	1+ 2−	2−	1+						6
SINO-AURICULAR	R	2	1	1	1		1		1							1− 1+			1

A-Arteriosclerotic. R-Rheumatic. S-Syphilitic. Ang.-Anginal.
Cong.-Congestive. Minus Sign (−) Dead. Plus Sign (+) Alive when last traced.
*Two not followed.

the intraventricular block group, six out of eight of these having a lethal exodus within one and one-half years after discovery. Finally, it may be seen that males preponderate very definitely in our series and that arteriosclerosis has been the main agent causing the cardiac disability.

Conclusions

(1) Heart block is difficult to recognize by physical signs. From a survey of the literature and our own experience, greater effort could profitably be directed toward the clinical recognition of heart block while instruments of precision should be more servile to the development of clinical acumen.

(2) Heart block (with the exception of the "sino-auricular" type) generally indicates serious myocardial damage. The intraventricular (bundle-branch) type of block offers decidedly the poorest outlook.

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*References preceded by asterisk (*) have been used in compiling Table I.

Discussion

Dr. William B. Porter, Richmond: I shall not attempt to discuss the paper, on account of the fact that the hour is quite late; but I should like to thank Dr. Wood for his very scholarly presentation of a subject which has been of intense interest to me for many years. The reason I am interested in the subject of heart block and other manifestations of disturbed cardiac function is that these phenomena represent evidences which are cardinal, so that one may say, without a doubt, that if a patient is suffering from heart block he has cardiac disease, provided, of course, that the patient is not affected from an overdose of digitalis.

Dr. T. H. Daniel, Charlottesville: I should just like to add a few lines about one of these cases included in Dr. Wood's report that is of interest. I was called to see this woman (a white woman in the early fifties) about two years ago. I had attended the family for six or eight years and had never been called to see her previously. She was

healthy and robust. She had a fainting spell to which they paid no attention, and had another about a week later, and I was called to see her. She looked well and felt well. I took her pulse and found it 36 and took her pressure and found she had a systolic pressure of over 300. I told that to a friend of mine in Charlottesville, and he said I was lying. I went down and took it again and found it the same; then I took Dr. Flippin down to see her. I call attention to this because, while this woman had a pulse of only 39 (which was the highest I got) and her systolic pressure was over 300, she has kept in health and fairly good comfort, doing her own housework and some sewing. (She is a seamstress.) I have tried to get her to come down for another examination, but without success.

DR. ————————: I do not at all think Dr. Daniel is lying, for I had one case like that myself. My patient was a man of about sixty-five or seventy years of age who lived for four years with a pressure of ————. He was a farmer and kept on with his farming and finally lay down and died suddenly.

DR. J. EDWIN WOOD, JR., closing discussion: Dr. Daniel has brought out two points of interest. It is always wise to study the cardiac rhythm carefully in middle-aged patients with attacks of syncope. A high systolic blood pressure is not infrequent in complete heart block.

HEALTH HABITS IN YOUNG CHILDREN.*

By JAMES B STONE, M. D., Richmond, Va.

It has been truly said that a large part of the medical practice among children deals with patients who merely need regulation of their daily lives. In the past too little emphasis has been placed on the question of the child's mode of living. In the search for organic disease we have been prone to overlook the high percentage of functional disorders resulting from errors of hygiene in the child's daily routine life. Many of the complaints for which children are brought to the physician are directly traceable to faulty health habits.

Search for Functional as Well as Organic Disorders

It is most important to look for organic disease in the child that is not thriving, but on the other hand emphasis should be placed on the fact that many children who are not suffering from any specific organic trouble are far from being healthy, and are just as much in need of medical attention as those suffering from gross lesions.

Too often the malnourished child, or the so-called nervous child, the child with a behavior problem, or the child who simply doesn't thrive is said to have "nothing wrong", is given a "tonic" and dismissed from the doctor's care, whereas further investigation would reveal numerous errors of a hygienic nature that when corrected would relieve the symptoms and bring health to the patient.

*Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

Factor of Growth in Childhood

With the advance of preventive medicine there is developing an increased appreciation of the importance of child hygiene. Early childhood is a period of rapid development, both physical and mental. It is this developmental phase of the young child that makes so important for him an observance of hygienic rules, or the "laws of health". In addition to the normal physiological processes that go on in the adult, the child must grow and gain. He must build up new structures in addition to replacing those tissues lost in the normal wear and tear of life. To do this and maintain good health a rather strict observance of hygienic laws is essential. Observance of these laws of health should become habits in the child's life. That is what is meant in this paper by the term "health habits".

Too Little Emphasis Being Placed on Simple Health Habits

Every medical man presumably knows the importance of these "health habits", but many parents do not. These simple, but fundamental, rules of health are not given the proper emphasis in discussing with parents the general care of their children. Perhaps the doctor assumes that the parents already know the importance and value of such apparently obvious needs for regulating the child's life and cultivating good health habits. Unfortunately, the very simplicity of some of these "health rules" leads to laxity in their observance and failure on the part of the physician to stress them properly in considering and discussing with the parents the child's health problems.

To increase the child's chances of being strong and healthy, too much emphasis cannot be placed on the cultivation of good habits in his daily regimen. It is impossible to take up in this paper in detail all of the questions of child hygiene. However, it is desired to call attention to a few of the factors that experience has shown to have been at fault in the case of a great many children whose symptoms were the source of untold worry to their parents.

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Of utmost importance, and probably of about equal importance in the child's daily regime, are the matters of sleeping, resting and eating.

Sleep at Night

Every young child needs from ten to twelve hours of sleep at night, and more often the latter figure. This should be in a quiet, dark, cool room. Strenuous play and excitement at bedtime should be avoided. If indulged in at this time, delay in going to sleep and restlessness during sleep are apt to result. Sound and restful sleep is important at any age, and is most essential to the health of the growing child. As previously stated, he not only has to maintain a state of physiological equilibrium, but must build up, in addition, new tissues in order to grow and gain. It is during the hours of restful sleeep that recovery is made from the physical and mental fatigue engendered by the day's activities and the young organism is made fit for the new experiences of the next day. Progressive development, both physical and mental, depends much on the receptive condition of the child; and the child's capacity to profit by new experiences, and his spirit for co-operation will be greatly enhanced by the long hours of quiet sleep.

Mid-day Rest

Not only this night rest and relaxation, but also a rest period or nap during the day is important for young children. This should be required of every child up to the age of six years, and in some cases, depending on the individual, should be continued to an even later period. Most children from the time they learn to walk until five or six years of age are extremely active, and if left to follow their own inclinations will overdo their strength. Many will go to the point of physical and nervous exhaustion before giving up, or realizing the need for rest. Much of the malnutrition, fretfulness and irritability, and various behavior difficulties seen in children of this age and older, can be traced to over-fatigue. The tired child usually does not realize that he is tired, but the condition manifests itself in his disposition as well as in the effect on his physical health. He is often difficult to manage, resentful toward being corrected, cries on slight provocation, and temper spells are common. A rest period or nap in the middle of the day frequently works wonders with these children. Needless restriction of play should be avoided, but a corresponding rest is essential to compensate for the output of energy and to avoid exhaustion.

The best time for this rest is immediately after the midday meal. Sleep comes more readily after a full meal, and rest at this time is more conducive to good digestion than is exercise. This rest not only has a good effect on the child during his waking hours, but will lead to more quiet and restful sleep at night. The practice of keeping a child up all day in order to make him tired, in the hope that he will sleep better at night, is very apt to have an effect opposite to what is desired. The average child will sleep much better at night if he has had a rest in the middle of the day.

Food Habits

The subject of diet is important and has probably been stressed much more than sleep and rest, because food is a more obvious need. Not only is a properly balanced diet essential if the child is to have the building materials needed to make a strong body, but the food must be properly prepared. The best of foods may be practically ruined from a nutritive standpoint by the manner of preparation. The above points relative to food are self-evident. The details of what constitutes a balanced diet and the manner of preparing the food cannot be taken up here. On the other hand, the importance of good food habits needs to be stressed.

The "child who will not eat" has long been a problem, and in general the higher the social level and the better the condition of the family budget the greater the problem becomes.

The causes of this difficulty are many, and vary in different families. The effect of eating between meals and of too many sweets in the diet is well known. A common cause of trouble is too much solicitude on the part of the parent. This may have had its origin in some illness of the child during which time the anorexia, due in this instance to the illness, was the source of great worry on the part of the mother. The child becomes aware of the extra attention and concern brought about by the failure to eat. After recovery he, perhaps unconsciously, retains this knowledge and, knowing the effect on the mother of his failure to eat, will refuse food in order to attract greater attention to himself. The desire

to be in the limelight is inherent in many children, and, whether this incentive for the refusal of food comes in the manner just mentioned or through some other accidental discovery of the effect on the parent of this refusal, there is no doubt that it is oftentimes the explanation of the child's refusal to eat. In such cases there frequently follows the vicious circle of refusal of food to attract more attention, and the increased solicitude on part of parent, or attendant, leading to more persistent refusal.

A similar result may come about from unwise conversation in the child's presence. Remarks to friends about poor appetite at once gives the child a place of distinction and the reputation of being a poor eater will be zealously maintained.

Another common source of trouble is the attitude toward food of the adults in the child's company. Expressions as to dislikes for certain food, or complaints about the monotony of certain foods being so frequently served, have a most decided effect in determining the child's distaste for those things. Most children are like mirrors and reflect promptly what goes on around them, and so it behooves parents and other adults coming in contact with children to set good examples in matters of eating as well as of morals.

Different problems are presented by different children and no dogmatic rules can be laid down that will apply to all cases. However, urging or coaxing a child to eat will in most cases result in failure. Children should eat because they are hungry, and not simply to please mother. In other words, eating should be a privilege and not a duty. Among the poorer classes where there is a real scarcity of food, so that eating *is* a privilege, the problem of anorexia in the absence of disease is rarely found.

A few of the explanations of refusal to eat have been cited. To prevent this condition, or to correct it, first of all establish regular meal hours, and have prompt attendance at meals. In general, stop all food between regular meals unless appetite is good. If the child eats well at meals and gets hungry between, bread and butter or unsweetened crackers may be given to satisfy the hunger and will not interfere with eating at the next meal, provided it is not given too close to meal time.

Food should be served attractively, but not in too large quantities. It is better to serve small amounts and repeat the serving if desired, rather than serve large portions. The impression of scarcity, rather than a superfluity of food is quite conducive to hearty eating.

Dawdling at table or playing with food should not be permitted. If food is not eaten within a half hour, which in general is a reasonable length of time to allow, it should be taken away, and nothing further given until the next meal. No desserts should be given unless other food has been voluntarily eaten. Display of concern over the small amount of intake should be avoided. In absence of illness, which would usually be manifested in some other way, persistent refusal to eat will not be apt to continue over any long period, provided no one shows any concern over the situation.

Too hurried eating and insufficient mastication of food are often responsible for vague digestive disturbances, such as indefinite abdominal discomfort or gaseous eructations. The remedy here is obvious.

Exercise

Exercise is necessary for good health. Properly taken it not only leads to good muscular development, but stimulates the appetite as well. It should be in the open air as much as possible and out of doors when the weather permits. Usually, the natural inclination to play will insure adequate exercise, but some children are inclined to play in the house rather than outside. Such should be made to get out in the fresh air daily. When weather prevents this, play should be in a room with windows wide open in order to provide good ventilation.

In contrast to the child who does not get sufficient exercise, there are others who overexert themselves to the point of exhaustion. These may need a certain amount of restriction. The excessively active child is frequently too tired to eat when meal time comes, and in such cases a short rest period just before meals will often result in a better appetite. Too much restriction of play is to be avoided, in order to allow development of independence and initiative. Diplomatic guidance of the child's activities, varying with the indvidual, and conducted along common sense lines should be the rule, rather than over

strict adherence to a too rigid schedule of play.

Stool Habits

Another point that needs to be stressed in the daily routine is the matter of regular bowel movements. Constipation is a frequent complaint, the source of much worry to the parent, and often an important factor in the child's poor health. To prevent or to correct this the establishment of a regular stool habit is most important. The logical time is immediately after breakfast, as the peristalsis initiated by the intake of food tends to bring about a natural movement at this time. A good elimination in the morning also prevents absorption of water and toxic substances from the lower bowel during the day. This habit should be established in early infancy and adhered to rigidly as one of the important functions of the day. Regularity is essential, and a small enema or suppository may be used advantageously until the habit is established. Inclusion in the diet of various laxative foods, such as fruits, coarse vegetables, whole grain cereals, or bran, and graham bread, is helpful. Where constipation has become established the use of laxatives such as milk of magnesia or one of the mineral oil preparations, with or without agar, in gradually diminishing doses may be necessary until the regular stool habit has been established.

Much more could be said in regard to physical health habits. An endeavor has been made to discuss some of the elementary but fundamental points that seem not to have been sufficiently stressed in actual practice. Many cases of malnutrition, intercurrent infections, and general poor health can be traced to a failure to carry out the simple procedures that should be habits in every child's life. The formation of these habits should begin in early infancy and be cultivated as the child grows older. Once established, they become a regular part of his life and their practice is continued without effort.

Mental Hygiene

A discussion of health habits must include some mention of mental hygiene. This in itself is a broad subject and one of tremendous importance in relation to child health. However, only brief reference to it can be made here.

Instincts are inherited but habits are acquired. We can do little to alter inherited instincts, but by proper training much can be done in the way of developing mentality and in molding the child's character and conduct. Habits of self-control really form the background of moral behavior. It is never too early to begin cultivating these good habits, and by so doing prevent the formation of bad ones. "The child must learn that his own will is not the highest law." Just as in adult life individual sacrifices must at times be made for the good of society as a whole, so in the case of the child some things that he desires must be denied for his general good. The satisfaction of the young child's every whim is not only unnecessary, but is an obstacle to the development of that quality of self-control that is so important in the formation of stability and strength of character. Care needs to be exercised to avoid over severity. The child's spirit should not be crushed; initiative and spontaneity of thought and expression are to be encouraged, but at the same time he should learn at an early age that all things desired are not obtainable. Many emotional abnormalities of later years begin in early life, and the establishment of habits of mental control from the beginning will do much to prevent the difficulties that often arise as the child grows older, and has to make various social adjustments in the adult world of reality.

Here, as in most instances, example is better than precept, and the child brought up in a household where there is harmony and happiness, and absence of discord, contention, and emotional outbursts, will have a far better chance for a healthful mental development and growth.

Firmnesss, but at the same time justice and fairness should be the rule in all dealings with children. They are quick to sense any unfairness or injustice, and nothing will do more to break down their confidence, and their respect for authority than unfulfilled threats and promises. Spoiling and nagging are equally bad, and both are to be scrupulously avoided.

Relation Between Mental and Physical Conditions

The relation between mental and physical hygiene is an intimate one. Physical and mental conditions react upon each other. Emotional conflicts often lead to physical ills, and on the other hand there is often a physical

basis for the nervous manifestations and behavior problems seen in children.

Effect of Early Formation of Good Habits

Good habits, both physical and mental, if established in infancy and continued through the pre-school period, when mental and physical development are going on so rapidly, will do much to reduce the percentage of retarded and physically unfit children now found when school age is reached. Not only this, but the good habits formed early in childhood are apt to be continued, with resulting better health throughout the school age, and later life.

Detailed Inquiry into Child's Life Important in Arriving at Diagnosis of Obscure Conditions

Work with children requires time and patience. Often the complaints are indefinite. They may be related to the digestive tract, the nervous system, the urinary tract, the respiratory tract, or perhaps it is said that the child is unruly, or simply does not thrive. Many times the physical examination will be negative as to any specific diseased condition. A thorough and carefully taken history should include in detail the child's daily routine of life through the full twenty-four hour cycle—his food and its preparation, the time it is eaten and the habits of eating; his rest, his exercise and his play. In other words, the physician should learn everything he can about what goes on in the child's daily life, and not only this, but the enviromental conditions under which he lives. In most cases, such an investigation will bring to light some very definite faults of a hygienic nature that even, in the absence of organic disease, are producing morbid conditions.

Prevent Abnormal Conditions by Teaching Health Habits

The plea of this paper is not only for the correction of these morbid conditions, but primarily for their prevention. The importance of health habits cannot be over emphasized and it is up to the physician to see that parents are properly informed on the subject of physical and mental hygiene to the end that their children may develop normally, and have sound and stable nervous systems in strong and healthy bodies.

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Discussion.

Dr. Charles E. Conrad, Harrisonburg: In discussing Dr. Stone's paper I simply want to emphasize some of the things he has brought out. In particular, in starting off with these children I feel it is absolutely necessary to get a complete history of the child, so that you know what you are dealing with. Very often little things will come up in the history that will make the difference between success and failure in your handling of the child. Also, after getting that history, I think it is well worth while to explain to the parents why you want certain things done. If you say dogmatically to the parents that you want such and such a thing done, the parents go home with no conception of why you want it, and very often the thing will not be done.

The advantage of midday rest I think cannot be over emphasized. An hour of rest in the middle of the day I think is often worth two or three hours added at night. These children are often worn out in the middle of the day, and an hour's rest then will mean a great difference. I had a little girl under my care and could not get her to gain weight. Finally, in July, the mother consented to give her an hour's rest in the middle of the day, and the first month the child has gained six pounds. It took a year, though, to get her to start the midday rest.

Another thing along that same line is the nervous child who does not realize he is tired. The majority of undernourished children are of that high-strung, nervous type that go past their endurance and get worked up to such a key that they do not realize they are tired at all. It is very essential that they do get rest in the middle of the day.

As to the handling of these children with regard to food, I think very often if these children are not given a taste of the things that they should not have you will have much less trouble. If they are given a taste, very often they will want the food. Also, in giving new foods, start with a small quantity, because you do not know what the child's reaction will be. The mental attitude has a great deal to do with the question, parents' urging the child to take food and also parents' saying that they do not like certain foods. If they say they do not like a food and will not eat it, very often the child will not eat it. Then spending the whole meal hour urging the child to eat and saying he must eat this and that will get the child so wrought up that he can not eat. I think very often these nervous children who will eat only small quantities can be helped by giving small quantities of concentrated food and then letting them eat other things also. I use a combination of Karo corn syrup, oranges and milk If you give them these concentrated meals three times a day and after that whatever vegetable or cereal you can get in, you have a good caloric basis, well distributed elements, and vitamin content.

As Dr. Stone said, it is very necessary for these children to get out of doors, as many of them want to lie around the house. Another thing to be con-

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sidered is that the time between school and supper is taken up by other things, such as music lessons and things of that sort. The child is given only a few hours out of school, and then to take up that time by music lessons, etc., I think is absolutely wrong.

DR. F. D. WILSON, Norfolk: No more important subject has been before this society for discussion and no more important subject will be before this society for discussion than this subject of the health habits of children. When you recall the enormous amount of disability among adults, when you recall the enormous number of children in our public schools (and most of our children are in the public schools) below par mentally and physically, you will begin to understand the need of consideration of the subject. The mental side of the child's life has had almost no consideration in years gone by, and while we have gone a long way in the correction of physical defects and the preventing of, and lessening the effects of, the acute infectious diseases, we have not made much progress in lessening mental disturbances or malnutrition in children. If you will remember that more than twenty-five per cent of the children in the public schools are more than ten per cent below the average weight for their height and age, and remember that approximately fifty per cent of the men drafted for the great war were physically unfit, you will see that this is a subject of tremendous importance. It has been up before nearly every medical society meeting in the past ten years, yet we pass by proper consideration of the child because we think perhaps the mother is going to take care of the matter and the child will perhaps be all right. Students of this question are emphasizing every day proper health habits, proper food habits, as well as correction of physical defects. I want to indorse what Dr. Stone and Dr. Conrad have said about this and make a plea for more careful study of the subject.

DR. BASIL B. JONES, Richmond: I enjoyed Dr. Stone's paper very much and also the discussion of the other gentlemen who have taken up certain aspects of this subject. I want to discuss just briefly poor appetite in children. I think it is very important in a case of this sort to get a careful history. That does not mean to pump the history out; if you will just drop a few questions, such as "Have you any difficulty in getting the child to eat?" and then sit back and let the mother talk, she will tell you a great deal. Not infrequently you will find a story, extending over months, of coaxing, begging, and even fighting to get the child to eat. In the majority of instances you will find that the way to cure that situation is not to treat the children but to explain the situation to the parents. By that I do not mean that the child should not be examined, because every child presenting these symptoms should have a thorough examination. I think it is very important, as a matter of prophylaxis, never to force the child to eat. The child may be getting along fairly well and then have a little cold or some temporary upset and lose its appetite. Then, if the parents force the child to eat, it will probably vomit. All of you know the effects of the sight of food which has recently been vomited.

The mother's worrying very often has much to do with it. The child realizes that he is the center of attention and dawdles over his meals, and the more he dawdles the more the mother worries, and a vicious circle is established. The way to overcome this is to explain things to the mother. The child may lose a few pounds the first two or three weeks, but if you can convince the mother and get her on your side, ultimately it will work out all right. You not only will have cured the poor appetite, in so far as it was dependent on poor management, but you probably will have improved the whole relationship between parent and child.

DR. WM. B. MCILWAINE, Petersburg: There are three things I should like to bring out. The first is that these children have hypoacidity; that is, the acid in the stomach is not sufficient, and the feeding of acid milk is a great help. Another thing is that these children have lack of vitamin B and vitamin D. Vitamin B seems to be essential for appetite. I have not enough experience with it myself to bring any definite opinion of my own, but all of us here should certainly be familiar with these three things—the hypoacidity and the lack of vitamin B and of vitamin D.

PRESERVATION OF THE GENERAL PRACTITIONER.*

By PERCY HARRIS, M. D., Scottsville, Va.

The subject chosen for this paper is one, it seems to me, that should be of considerable interest to many in this audience. It is very probable that most general practitioners wish they were specialists when they think of the men they know practicing specialties who are so successful professionally (and therefore financially) and compare this success with their own ofttimes ignominious treatment and poor remuneration. But, although the thought of taking up a specialty is enticing, it is my honest opinion that what the public really needs is better trained general practitioners, men of higher medical education, well fitted to give sound advice to their patients.

In choosing medicine as a profession, the idealist is actuated by thoughts of relieving the sufferings of humanity, of preventing disease, and of endeavoring to make the race stronger and better. Coupled with this altruistic view of the matter is the very human feeling that "the laborer is worthy of his hire." It has been said by someone that "Everyone has a natural right to choose that vocation in life which is most likely to give him comfortable subsistence," and if the time comes, and it seems to be approaching, when the general practitioner cannot make a comfortable subsistence, who will take his place? The object of this paper is to inquire, in the brief time at my disposal, into the causes of the situation in which the general practitioner finds himself today, and if possible to suggest a few remedies. In medicine, more than any other profession, I believe, there is a lack of cooperation. This

*Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

is not at all in accord with the high ideals doctors should have, but seems unavoidable. Doctors in small communities especially are hardly ever good friends and seldom act in harmony. For some obscure reason greed seems to rule their relations with each other much more than it does in larger places. This is deplorable but true, and it is bound to be considered by young men seeking a location after graduation. They do not want to settle in a small place and soon be at odds with the one or two other doctors there, so they give up the idea of general practice, specialize and settle in a larger place. The thought of becoming a general practitioner in a city does not seem very alluring either, because it takes so long to become established, and well trained specialists seem to get a start so much more quickly. Then too, in the country or small towns there are other disadvantages that used not to be considered, such as large, sparsely populated country with many miles between patients and bad roads for these long trips. Also, in rural districts in the last few years the farmers have not been prosperous and money was scarce and the doctor's was the last debt paid. In spite of all this, these people outside of cities are entitled to medical attention and must have it, but who is going to give it if all the young men entering the medical profession shun general practice and go to cities where life is easier and much more comfortable? They do not want to settle down and be "just a country doctor" whose opinion outside of his own field of practice is often held very lightly indeed. If he has ambition, and it takes a good deal of it to carry one through a modern medical course, he wishes to make of himself the best doctor possible, and furthermore he wants to be considered professionally good, by his patients and the public at large around him. He just can't afford to be a poor doctor, the competition is too keen. I do not mean to give the impression that more doctors are needed, but that with the better facilities today, such as good roads and automobiles, the general practitioner should attain a higher standard, cover more territory and receive better remuneration.

Of course a good general practitioner must study, know, and practice preventive medicine, and if he does not do this he is unworthy of his title and deserves to have it taken away from him. But to one who appreciates, to the fullest extent, the benefits of preventive medicine and who wishes to practice it, it is very hard to stand the accusations that some men in the state cannot do this work correctly. For instance, one doctor was accused of sterilizing his needle by wiping it with his fingers; another was said to have given serum by inserting the needle through the patient's coat sleeve, and still another used the same needle, unsterilized, for a room full of children. It does not seem fair when our ability, as a whole, is measured by three such incompetents. Another complaint says that preventive medicine cannot be left to local physicians because this was done in two or three counties and the work was badly neglected. The people in these communities had not been educated in the needs of preventive medicine or it would have been done and done well, right at home by the general practitioner. It seems to me the state would be saved a large sum and the general practitioner would be greatly benefited if the State Board would only cooperate with him, and not send out men to do the work to which the local physicians are entitled. The general practitioner, any way, does not limit his preventive work to the giving of vaccines for typhoid, smallpox, etc. He does all of this and tries to prevent many other diseases, such as cancer, eclampsia, venereal diseases, tuberculosis, heart trouble, etc., besides. Preventive medicine should begin with the child at birth, and all preventive vaccines that are usually given should be given before the child is two years old. It would be well to see that a law is passed requiring the death certificate of all persons dying with preventable disease, to show who was at fault, that is whether the parents had refused preventive treatment, or whether their family physicians had advised it. An investigation should also be made of the midwife situation, particular attention being paid to cases in which physicians are called in after a midwife delivery to help repair the damage due, perhaps, to lack of preventive treatment. In such cases, in the event of death, the doctor signs the death certificate and has it credited to him, thus increasing the mortality rate attributed to physicians, while it does not count at all in the percentage of deaths attributed to midwife practice. I have worked for preventive medicine ever since I left college. I have been before the Board of Supervisors of my county and have made appeals

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for this work, thinking it was a splendid thing, but the ones in authority in the health work have forgotten, or do not care, what becomes of the local physician and he is not even allowed to vaccinate a school child or give him toxin-antitoxin. If you suggest this treatment, the parents say "The Health Board will do it free." This is all right in the case of paupers, but why shouldn't those able to pay be made to do so?

Public health agencies are free to use methods to excite the interest of the citizen, which for various reasons cannot be used by practitioners. Sometimes these methods are so out of harmony with the ideals of medical practice that they receive little cooperation or support from physicians in private practice. The idea given to the public is that the medical man will not aid in the work, that he uses unsanitary methods, and that an organized force has to be sent out to do this preventive work. We have cooperated and shall continue to cooperate, but most doctors feel that, if the state furnished the material free and paid the local physician to do the work, the task would be performed more efficiently. My personal feeling is that I should much prefer to do this work in the schools gratis than to have some one sent to do it. This gives the idea to your clientele that you are not capable or will not do the work. With local physicians in charge, every school, no matter how remote—and the remote schools are generally those most in need of preventive medicine—will have service, and this is not the case now. Also, your children will not be made ill by treatments given the second time, when the child itself is ignorant of what he has had in the way of vaccines. It seems to me just as unfair for the state medical forces to take things into their own hands, by setting the time and place for the giving of preventive medicine, as it would be for the state to go to a town already provided with hospitals, and there erect a new one, and say to anyone in the community "Come here and be treated without cost." This will happen sooner or later if conditions similar to the present ones continue, and then you will have *state medicine*. Do you want it? No! These means are unfair to all concerned. A doctor and nurse, employed by the county or the state, cannot drive, say twenty miles, to a school and do the same work that a medical man living in the community can do, neither can those sent in do it with as little cost. Every physician should be a party to the work of the health boards, and should feel the same interest in preventive medicine. Then a cooperative feeling would exist between the forces instead of the medical man feeling that what he has been educated to do is being taken away from him. Let there be team work of every blooming soul. If this condition continues to exist you might just as well close your medical schools for general practitioners and have nothing but a few for specialists, and the State Board. There are only sixty-nine medical schools now where there used to be 160. It will be a sad day for the laity when the general man is gone. Preserve the general practitioner and you help the laity as well as the specialists. With no general practitioners, I believe the country will be just as full of cults as it is now of bootleggers, and I believe we would come to regret it just as we have the Volstead Act.

There is no profession, and I do not except the ministry even, that has done more for the welfare of the masses without compensation or selfish thought than the medical profession has done. The public should be educated to a more complete appreciation of the profession, and this cannot be done when nearly all treatment can be had free of charge. People *never* appreciate what they get for nothing. I cannot help feeling that the fine work of the health boards, clinics and social service workers, and co-organizations of various kinds, has brought our standing down, not intentionally of course, but only through great enthusiasm on their part to do good to the masses of the people. This energy has been misdirected sometimes, it seems to me, for they are pauperizing the people and are bringing destruction upon the general practitioner. No one wishes to see the doctors' standards lowered. Keep them high and make them higher for it is human life with which we are entrusted and that is the dearest thing in life to each of us after all.

The doctor's location plays a large part in his career. If his home town or county has in it a medical school, clinics of all sorts, a tubercular sanatorium, besides the health board, social service work and other similar organizations, it is a fine place to live in, but a mighty poor place for general practice! Everyone who can get it, wants free treatment, and this is only human nature. I have talked with many

men at the head of these different branches of medicine, specialists most of them, men of the highest type, and most of them are thoroughly disgusted at the situation and know that they are imposed upon daily, but what are they to do? They hate to complain for fear that it will be thought that they lack public spirit or that they are placing their love for gain above their desire to serve humanity. This question now concerns the whole world and the best medical men in this country are continually writing about it and discussing the subject. We should protect these men and they should protect us.

The man who does industrial medicine or contract work is only too glad to have his preventive medicine done for him as this does not affect his income. It has been suggested that contract or list practice might be carried out successfully in general practice in order to combat the vast and seemingly irresistible forces that seem to be sweeping the medical profession into positions quite different from those that are satisfactory to our best traditions. I disapprove of any such procedure. I did some contract practice during my first years out of college, and was at the time almost ashamed to acknowledge it, for I consider such work unethical, and almost degrading to both the doctor and the people on the contract list. Contract practice under some conditions and in some places is, however, almost a necessity, and no plan that works out better has yet been formulated. Very few persons, though, value the services of a contract doctor; they have an unappreciative attitude and seem to feel that they must get their money's worth. The doctor becomes careless and negligent and instead of improving his scientific mind, it goes to waste. So-called "preventive health examinations" would also come under the head of contract work. In these the doctor is supposed to notify a patient to come for an examination. This looks to me too much like "gunning for trade," and does away with our fine traditions of independence and individuality which are parts of our splendid heritage.

A doctor wants to be kept at work, but not by these methods. A busy doctor is a better physician than an idle one, for he sees more cases, is more alert and experienced in making his diagnoses, and in formulating his treatments. For a doctor to win success in the business world means that he has devoted his best energies and powers through long years to the achievement of his ends, and it surely hurts, after doing all this, to lose out. Oliver Wendell Holmes says, "I warn you against all ambitious aspirations outside of your profession. Medicine is the most difficult of sciences and the most laborious of arts. It will task all your powers of body and mind if you are faithful to it. Do not dabble in the muddy sewer of politics, nor linger by the enchanted streams of literature, nor dig in far-off fields for the hidden waters of alien sciences. The great practitioners are generally those who concentrate all their powers on their business. If there are here and there brilliant exceptions, it is only in virtue of extraordinary gifts and industry to which few are equal."

The practicing physician is the most essential arm of preventive medicine. There should be a sharp line drawn between preventive medicine and public health work. The present-day health officer should only establish leadership. In numbers of places the general practitioner is doing all the health work and doing it successfully. The general practitioner today has more obstacles in his path than ever before, but many of these obstacles can be removed if we can get the proper cooperation, but we have the forces of the state, politics, finance, religion, and education all working together, and creating a current against us. We find large numbers of our patients receiving free treatments at the hands of public health agencies, or at a cost so low as to kill the competition with the private practitioner. These clinics, though, do not want the people who are able to pay; they want paupers, and patients that attend clinics are generally so considered. A large part of the population is coming to regard all this free treatment as a matter of course, and the doctor who has expensively trained himself is being ruined for he is justly entitled to a large part of the work done by these free agencies. Billings says that a painstaking general practitioner is able in a great majority of cases to make an accurate diagnosis without expensive equipment. I believe that everyone, no matter what station in life, wants a good family physician, and when a patient goes off to neighboring cities without consulting his physician, he has done three wrongs, first to himself, second to his doctor, and third to the specialist that he consults.

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Cooperation must be had between several forces before efficiency, peace and harmony will prevail. These forces are first the public, second the health boards and co-organizations of all kinds, third the hospitals (state, city and private) especially the clinics, and last the general practitioners. I should like to see a set of resolutions offered for the benefit of all this disturbance, believing that conditions satisfactory to all concerned can be worked out. I should like to offer the following, subject to suggestions from any member of the Society:

BE IT RESOLVED: That the Medical Society of Virginia request the *State and County Health Boards*, State Institutions and Co-organizations to cooperate with the general practitioner of both the city and rural districts.

That these physicians be given an opportunity to do preventive medicine in the schools as in their regular practice and what other professional work for which they are equipped, and that they cooperate with the Boards and Institutions.

That patients applying to these organizations and institutions must have a certificate from their family physicians saying that they are worthy and financially unable to pay for needed attention, emergencies excepted, and

That the Medical Society of Virginia urge that all State Institutions and co-organizations be provided with competent social service departments.

In sympathy with this cause some of the best men are doing and saying what they can to correct it. Such men as the president and the president-elect of the American Medical Association, Drs. Thayer and Harris. Dr. M. L. Harris, President-elect, in speaking of the "Organization of Medical Practice" says: "We as physicians are now interested in only one phase of this great problem, and that is health. Whatever scheme is advocated for the care of the health of the people, the physician is the one who must do the work, as he is the only one qualified to do it. Since this is an obligation of the profession it is not unreasonable that the profession should assume control of those agencies that contribute materially to a solution of the problem. These include all hospitals, clinics and dispensaries. The profession should own or at least control and manage all of these institutions and thus make it possible for everyone to obtain competent medical service at a cost within his means. Unless the profession makes some provision for caring for the sick all the time, organizations such as have been mentioned will continue to increase in number and influence and the profession and the community will suffer proportionately, for, as has been stated, anything that is detrimental to the welfare of the profession must act detrimentally to the whole community."

DISCUSSION.

DR. SOUTHGATE LEIGH, Norfolk: Dr. Harris has brought to our attention an important subject and indeed a very vital one.

State medicine is in the offing and is the one greatest danger that is confronting our profession today. The only way to keep it off is by organizing, strongly, nationally, in each state and in each county. The House of Delegates of the Americal Medical Association has been fearful of it for years and has used every means in its power to help prevent it.

It is natural for state health officers to want to be thorough and proficient in preventing sickness and death. No one can do otherwise than applaud such a purpose. But this can be done with the cooperation of the profession and without doing it grievous harm.

All general health clinics should be conducted by the local doctors, *with the assistance of the state health men.*

The local medical society in each county should be practically an arm of the state health department. The trouble is that many counties have no such local organization.

I happen to know positively that the present management of the Virginia State Health Department is unwilling to hurt the profession in any way and is anxious to do all of its work in full cooperation with the local doctors. Such local doctors must do their part, however; and they can not do it without organization.

That means, naturally, that each county in the state *must have a local medical society* if only for business purposes. It should also have a woman's auxiliary to strengthen the doctors' hands by educating the women of the county as to the right way to carry on the health work of the county.

Lack of organization is the weak point of the profession of Virginia. There is every reason for a local organization in each county and none against it. Why, then, are so many lacking? It is possible and even probable that precious time is being lost, that further delay may be disastrous!

DR. ROY K. FLANNAGAN, State Department of Health, Richmond: I want to thank Dr. Harris for his paper. He is a personal friend of mine, and Dr. Harris has always been cooperative. I do not want you to get any idea that he has not been working with the State Board of Health. I indorse what he says along that particular line. The State Board of Health, as you know, has been striving very sincerely and for quite a number of years to have the line of demarcation drawn as closely as possible between the general practitioner and its own work—that is, what properly belongs in the domain of general practice and what properly belongs in the domain of public health. Dr. Williams has written several very fine papers on that subject which have been very widely distributed. So far as we have been

able to arrive at a conclusion in the matter, we feel that we are safe in the domain of prevention; that the thing in practice which specifically prevents disease might properly belong to the State Board of Health, and that which represents cure very particularly belongs to the practitioner. Now, we are trying to draw that line. It is not the easiest thing in the world, particularly in tuberculosis. We have had to accept the charge of the State tuberculosis sanatorium, and that is one domain in which there is a certain amount of cure and a great deal of prevention. It has been a great help to the general practitioner, and I do not think there is any disposition to take away the responsibility of the State Board of Health in the matter of education of the people by sanatorium treatment.

As to the matter of clinics, we do no clinic work at all except in prevention. We do a certain amount of vaccination. Is that cure or is that prevention? Is it in the domain of preventive medicine, or is it in the domain of cure? Whether we shall continue to do that rests very largely upon the medical profession. If the doctors will do the vaccination, if we can get the children vaccinated in sufficiently large numbers, we shall be glad to leave it to them. You see we have to do something with the children of the present generation; we can not wait until we get the physicians organized. We want the local health boards working with the local medical societies, to take command of the situation; and their advice will be listened to with the most profound consideration, and there is no doubt but that you will find the State Board of Health working hand in hand with the medical society and with the profession. We want to solve this question in the best way for all The Lord knows we can not get away from the practitioner; he is the foundation stone of public health, and we have to preserve him.

DR. HARRIS: How is the general practitioner going to compete with the local health department when that service is done free? We can not compete with the board of health and clinics when the medicines and vaccines are furnished at cost and the work is done by them free, and such competition was never intended.

DR. FLANNAGAN: In the County of Albemarle, from which Dr. Harris comes, they have a local county health department with a whole-time health officer and several nurses; and I may add that Dr. Harris is a valued member of the board of health of the county that is responsible for that department.

DR. W. C. HARMAN, Dolphin: Dr. Flannagan says that if the doctors would give these prophylactic treatments the health department would not do it. In my county the health department is giving toxin-antitoxin and scarlet-fever and typhoid vaccines for ten cents a dose and also taking out tonsils at a very low rate. I want to say that I do not think the doctors are going to do it at this price.

DR. PERCY HARRIS, Scottsville, closing the discussion: I just want to thank these men for the discussion of this paper. The solution of the problem, as I said, will take lots of work. I do not know the solution of it, but I am reminded of a joke told on a little freckled-faced, red-haired boy who came to Sunday school and had one penny. The teacher asked him, Johnny, aren't you glad to give this penny to the Lord?" "No," said Johnny, "the Lord has ruined me." That is very much the way I feel; the health organizations and clinics have ruined me.

SOME IMPRESSIONS ON GASTRO-INTESTINAL DISEASES IN INFANTS AND YOUNG CHILDREN.*

By WILLIAM B. McILWAINE, M. D., Petersburg, Va.

In presenting this paper I would like it to be understood in the beginning just what I mean by "impressions". It is this—I have no series of cases studied scientifically with laboratory data and autopsy reports to back up what I am to say. They are simply some ideas that have been impressed on me by eight years of practice, a fairly large portion of which, as it is with all pediatrists, has been on the gastro-intestinal tract. Were I connected with a medical school or some large hospital center, I would probably not dare to even mention the word "impressions" for there it would be so easy apparently to prove or disprove one's ideas by statistical studies and other scientific laboratory work that mine would probably be knocked into a cocked hat in a very short time. However, with your indulgence I shall bring out some ideas not at all original with me, but which have helped me to classify and treat gastro-intestinal diseases of childhood.

As to the ETIOLOGY, I believe firmly in the theory, old fashioned as it may be, that most disturbances of the digestive apparatus of the infant and young child are due to something that is put into the stomach. While, I admit that there may be some cases of diarrhea caused reflexly from an abscessed ear or concealed mastoid or pyelitis or what not, still it is my definite impression that all they do is to lower the infant's digestive capacity and, had the feeding been handled correctly, while locating the cause, the diarrhea would probably never have occurred. I doubt not that some professors will hold me up to scorn and derision for my disbelief, as in talking to one not so long ago he advanced the theory that all gastro-intestinal conditions started with an infection in the throat and were probably all reflex from that focus. He said that the fact that we found undigested pickle and peanuts, half chewed apples and hunks of soggy biscuit dough in the vomitus and stools of the child sick with gastro-enteritis was not proof they caused the trouble. I admit that I have no proof, but after seeing repeated cases of children perfectly well in the morning and ill with temperature, vomiting and with diarrhea with the stools full of half chewed tomato

*Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

skins or handfuls of whole butter beans, after stuffing these articles for dinner or supper, gives me the impression that they were most probably the cause.

In spite of the fact that some doubt everything, as to the etiology of gastro-enteritis, statistics and impressions are almost unanimous in stating that heat, humidity, bad handling, and poor environment, flies, and filth are important factors in the high incidence of gastro-intestinal disturbances.

Another very definite impression made on my mind by my own cases is that the past dietary history seems to have a great deal to do with digestive upsets in childhood. I believe it could be proved that while breast feeding is ideal up to a certain point, there are many more cases of diarrhea and dysentery in babies raised too long at the breast than in those weaned may be a little too early. So much am I convinced of this that when a mother tells me as they often do, "I am going to nurse my baby through his second summer as then he will be teething and have diarrhea and the breast milk will save him," I reply, "If you attempt to nurse your baby through the second summer he probably will have diarrhea and the breast milk will be the worst thing for him and you will have to wean him when he is sick. Better start in the winter and get him on a proper formula for summer." Now, my three main objections to prolonged breast feeding, which even now some doctors urge on their patients, are:

1st. It lulls the mother into a false security. She thinks as long as the baby is nursing it cannot get sick and allows it to eat a little of this and that from her plate, mostly half cooked biscuits, ice-cream, a little watermelon, pickle, etc., and then wonders why it does get sick.

2nd. A child that nurses the breast too long will not eat correctly, nursing all night and refusing to touch milk in any form and so the intestinal tract as well as the rest of the system does not have the proper nutrition and is a more easy prey for infection.

3rd. So many mothers nurse the baby for eighteen months to two years to prevent another pregnancy that a lot of times they are pregnant several months before they realize their condition and, in spite of the opinion of one of my learned Boston professors as well as others, I still believe that nursing a pregnant mother is bad for the child during the nursing. Old fashioned perhaps, but nevertheless a definite impression based on my own observation.

In the etiological factors of gastro-enteritis I must not forget to emphasize the absolutely definite impression which might almost be called a fact that some forms of dysentery are extremely infectious. All of us have seen dysentery go through a household, have seen cases grouped together in localities and believe that just like typhoid fever the infection is carried to a perfectly well infant by fingers or flies. These are generally a typical enteric infection due to the Dysentery Bacillus (Flexner Type) which can be proved by examination of the stool and serum agglutination reactions, though in my own practice stool examination has been very unsatisfactory. However, as this impression has the backing of so much statistical data and of so many other men, we should all recognize the fact and utilize it for the institution of preventive measures.

To recapitulate briefly the chief etiological factors in gastro-intestinal diseases are, as I see it:

1. Irritant foods and undigestible articles of diet.
2. Hot summer and poor environment.
3. Past feeding history.
4. Dysentery infection from another case by flies, etc.

In speaking of the Symptomatology of gastro-intestinal diseases, we must realize that the symptoms and signs vary in accordance with the type of disease which may be the mildest of indigestion to the severest form of cholera infantum, or most toxic dysentery.

In the mild form we will only have a slight mild diarrhea of four to six stools not well digested, loss of appetite, and failure of the infant to gain. This type is often seen in intensely hot weather when no evidence of improper feeding is found, but we must remember that even these may quickly become serious, and institute proper proceedings early.

Next in order we see the regular so-called *fermentative diarrheas* with the green, loose, frothy stools which are acid and irritate the buttocks. There is some straining with restlessness before the movement, which is expelled with gas which reminds me of a rather inelegant but expressive exclamation of a

colored mother in my office who remarked as her child had a movement of this character, "Dar, he done bust loose again".

These fermentative cases are the ones seen by all of us so frequently due to a high carbohydrate feeding as condensed milk, Mellin's food, or Malted Milk. They vary in intensity from mild to critical, depending in my opinion largely on the length of illness and the type of treatment.

Next we find what I call acute indigestion, a term frowned down on by most authorities but what shall we call the type of case that is well one hour and after eating a large quantity of improper food is taken very ill with temperature, vomiting, and diarrhea containing undigested particles of food? It is surely indigestion for we have the irritant action of the partly digested food on both stomach and bowels, and it is certainly acute for an illness of several hours is hardly a chronic ailment. So expecting criticism, I shall nevertheless call these acute indigestion spells. The cause is generally improper food. The result, anything from a mild diarrhea to a severe dysentery infection, depending largely on the time before treatment and the institution of the proper therapeutic procedures.

Next we come to the *infectious type of gastro-enteritis* which almost always has as cardinal symptoms, definite pain, straining and bloody mucous stools. Of course these may vary from a very mild easily remedied condition to one so severe that death results in several days in spite of everything we can do, or go into the so-called chronic dysentery, that is, lasting weeks or even months though never severe.

It is my definite impression that most dysentery or infectious diarrheas start with an acute indigestion from improper food. This irritates the intestinal mucosa; there pathologic bacteria find lodgement, giving rise to our toxemias of the dysentery class. While I admit that perfectly normal babies on a perfectly proper formula can and do have infectious diarrhea, still I believe that the ratio between those set up by improper food and those transmitted by carrier, as flies and hands, are about four to one. As a rule two factors are necessary:

1. Injured intestinal mucosa.
2. A dysentery bacillus.

There are as many who have injured intestinal mucosa followed by diarrhea, a few bloody mucous movements and slight straining without the bacillus and so do not develop into a toxic dysentery infection, as there are cases in which we cannot find an irritant to the intestinal wall and yet there is a definite infectious intestinal process in the child.

As to individual symptoms, the following are most important and of serious moment:

1. Vomiting.
2. Toxemia.
3. Fluid loss.

Vomiting occurs in the beginning of most all types of gastro-intestinal diseases of children, and can generally be controlled by the proper procedures. If not controllable or if it develops later in the course of the disease, it is a most ominous feature.

Toxemia, indicated generally by temperature, pulse, expression, and its effect on the nervous system, is always alarming. At the beginning, it is to be expected it is controllable, but developing later or steadily it is an indication of disaster.

Fluid loss, indicated by loss of weight, poor turgor to the skin, etc., is to be expected after several days, but rapid and uncontrollable fluid loss is the beginning of the dreaded acidosis and means but one thing.

To recapitulate briefly, the symptomatology varies from mild to critical, depending largely on the early institution of the proper therapeutic measures. The most feared and ominous symptoms are vomiting, toxemia and fluid loss. Remember even the mildest should not catch us indifferent or uninterested. We are dealing with a deadly foe of childhood. I am always reminded, when called to a case of gastro-intestinal disease, of the thrill we got when in the play, "The Bat", the detective whispered from the darkened stage, "There is a killer in this house." That's the way we must consider these diseases. Their total in the lives of our little ones is stupendous. This killer is still with us and we must give him no headway by indifference nor neglect. The cry must be "No quarters."

When we enter the realm of THERAPEUTICS of gastro-intestinal disease we have a rich field both for self-congratulation and also for self-condemnation. I heard an eminent Virginia pediatrist say only recently that, had he known twenty years ago what he knew today as to the treatment of diarrhea and dysentery,

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how many lives he could have saved. We have made progress surely and yet the statistical reports of deaths from gastro-enteritis all over the United States as well as in our own State is still appallingly large.

To enumerate a few of the factors in the prevention of this class of disease:

1. Better milk supply.
2. More rational and better balanced infant dietaries.
3. More interest in the baby, its growth and development, by the parents.
4. More interest in the baby by the general practitioners and those specializing in pediatrics.
5. More interest in the baby by the U. S. Public Health and State Health authorities.

After all most of these above were sadly neglected fifteen to twenty years ago. Preventive pediatrics is becoming more and more popular both with the physician and mother, and that eventually means a lower incidence rate and so a lowering of the general mortality rate.

What does lower our mortality rate is an appreciation of the newer methods of treating these diseases. I shall discuss them briefly under three heads:

1. Dietary.
2. Therapeutic measures other than drugs.
3. Drugs and how I use them.

Under the first it will obviously be impossible to discuss all the ideas of the feeding of these sick babies. The most outstanding are the use of Protein Milk in the fermentative type of diarrhea and blessed realization that starvation is not necessary for other than a short period of time. It has been my definite impression that Protein Milk is a life saver in fermentative diarrhea. It is almost uncanny to see an infant having fifteen to twenty green, acid, fluid stools, improve by the simple therapeutic procedure of feeding that infant a milk with a high percentage of protein. The stools become thicker, the number is reduced, the water loss is stopped, the baby improves; we see it with each visit. I use it constantly, I recommend it absolutely and, for fear that my opinion will have such little weight that some won't use it, I may say that it has the backing and recommendation of most if not all of the leading pediatrists of the country.

The other outstanding dietetic advancement in treating gastro-intestinal diseases is the idea arrived at after much opposition, much criticism, and much scientific and practical experimentation that far too many of our dysentery cases are starved to death each year by the doctor, nurse, or mother, or by the patient himself.

After the first shock of the infection is about over, after the preliminary starvation period which is still recommended but supplanted by fluids such as lemonade, weak tea, orange juice, or some other carbohydrate solution, we must see that the child gets enough nourisment to have some effect on the stools themselves. Many a case still passing blood and mucus, still straining, and having pain before movements should be fed some form of acid milk and, as soon as possible, cereals, jelly, junket, custard, etc. For I believe that if we can get several formed stools in twenty-four to forty-eight hours we shall see a big improvement in the patient.

The newer knowledge of the dietetics of dysentery is hard on the attending physician for any setback will be blamed on him; the diet is hard on the nurse or mother for she has been taught to think that if her child has dysentery it can digest absolutely nothing; and it is hard on the child for often there is an aversion to food, especially to the one ordered. Here is where the previous training of the child may either lose or save its life. A spoiled, self-willed, uncontrolled child has about one-fourth as good chance of recovery as those who are used to eating what is set before them or are willing to co-operate with the attendants and eat what is ordered. All of us can recall children that could be made to take nothing even by force and who became so weak that the toxic heart simply played out before the proper amount of nourishment and fluids could be gotten in.

It is my definite impression that these so-called dysentery or infectious cases are similar to typhoid fever and have to be treated along the same line but much more vigorously, for we know that typhoid is a self-limited disease. Dysentery untreated or incorrectly treated in my opinion has no definite course except a downward one.

In mentioning therapeutic measures used in our cases of gastro-intestinal diseases, I will stress only one but the knowledge of that one

has helped to change the course of many an infant and child ill with diarrhea.

It is a more frequent use of intra-peritoneal hypodermoclysis. We know now that one of the chief dangers of a profuse watery diarrhea accompanied by vomiting is the water loss by these two factors. We have all seen this type of case many, many times. The child with sunken fontanel, eyes as big as saucers, skin flabby with no turgor, abdomen sunken, etc. The whole picture is one of rapid dehydration. In this condition the intra-peritoneal injection of saline simply puts into the system the fluids for which the child's tissues are starving, and we generally get excellent results. My impression, however, is that we should order our intra-pertitoneal injection on selected cases. In my opinion it is of little use in acute toxic dysentery, with high temperature unless the child is vomiting and I think as a rule the cases of marked abdominal distention generally show more signs of irritation while the injection is being given and respond less readily to its effect. Fluid loss is one of the most important symptoms to be considered, however, and though I prefer by far the stomach route of absorption of water or fluids, if the child is vomiting we must try fluids under the skin and in the peritoneal cavity in any or all cases.

Another therapeutic procedure which is being used more and more is the transfusion of blood. My personal experience with this measure has been so slight that it is of little value. However, it is my impression at this time that unless we have hospitalization of the case and men trained in doing transfusions, the danger of the procedure itself and the shock to already toxic infants may be disastrous. We shall await with interest the future development of transfusion in gastro-intestinal diseases.

I want also to state that nursing care with its colonic flushings, alcohol baths, ice-caps, hot water bottles, and all the little things which a conscientious hard working nurse can do to make the child comfortable is a great aid in handling these cases.

Coming to the drug therapeutics of gastro-intestinal diseases, what shall I say? The controversy has waxed and waned, the pendulum swung backwards and forwards, from the time when the child was drugged profusely to the time when no drugs were used at all. I personally take as practical a point of view as possible. Drugs in my opinion are the least important part of our treatment and yet, with such a death rate as we have, we must use every element of our armamentarium, even the least important sometimes. The grave danger in the doctor's life is the ease with which we write a prescription and then we can take our hats and go to our next call. It is so much simpler, it takes so much less time, it satisfies the parents so much better to say, "Have this filled and give it every three hours", than to explain just why an ounce of water is to be given every one-half hour or how to give a bowel irrigation, but I am glad to say parents are asking two questions in this modern age which shows their advancement at least; first they want to know, "What is the matter with my baby?" and second, "What shall I give it to eat?" and so again emphasizing the part that the proper diagnosis, its explanation to the mother, and the directing of measures other than drugs are the essential part of the therapeutics of gastro-intestinal diseases. I shall briefly discuss the drugs:

Dr. A is treating a case of dysentery in the adjoining flat to my case, using no purgative; Dr. B. is treating a case next door instructing a mother to give one teaspoonful of castor oil after each movement; I am treating my case as indications arise, which at times calls for a purgative and at times not. All three cases got well, which goes to show that we were all lucky rather than skillful. My impression is, however, that in cases of acute indigestion from overindulgence in undigestible food, a quick cleansing of the stomach and intestines is desirable. Personally, I like castor oil but, if the stomach is irritated and the child is vomiting, I use and have been impressed with the efficacy of small doses of calomel repeated at intervals. With the mention of the word calomel probably one-half of the medical profession will gasp with astonishment or at least elevate their eyebrows, but as a wandering husband said when explaining his absence, "That's my story and I'll stick to it."

In a simple diarrhea, no drugs are used with any effect that the diet alone cannot accomplish. In dysentery, if the onset is very sudden with high fever and vomiting, I use broken doses of calomel early and after that an occasional laxative as magnesia, if the number of stools become too few, for proper elimi-

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nation is essential to combat toxemia. Stimulants if necessary are used freely and while I personally prefer brandy in my cases I would not insist if my consultant prefers grape juice. In cases where rest is necessary I do not hesitate to use opium, preferring paregoric or occasionally tincture of opium.

As to serums for the infectious type of diarrhea, while my experience is limited, I have failed to see enough positive proof of the direct results to recommend it, though I feel that if we are ever to conquer this type of disease some one must produce a specific serum; so far no one has, in my opinion. In the chronic type of dysentery if there is a loss of appetite, occasionally I give a tonic and during convalescence I always use iron, both organic and inorganic.

Oh, would that the solution of the case was dependent on a drug, but alas, success in gastro-intestinal disease comes not that way.

In concluding this paper let me say again that no authorities are quoted, no case histories have been given, no data to prove anything I have said. I am presenting some of my reactions to gastro-intestinal diseases of children in a very poor and sketchy way, I admit, but perhaps some one, some where, may derive some benefit. It is my hope that even though my impressions are all wrong, they might stimulate some one to aid us in solving our distressing and alarming gastro-intestinal diseases of infants and young children.

434 *West Washington Street.*

Discussion.

Dr. Basil B. Jones, Richmond: I enjoyed Dr. McIlwaine's paper very much. It so happens that a short time ago I was discussing this same subject before a medical society, and Dr. McIlwaine discussed my paper. He took exceptions to certain theories I had, and we argued about it afterwards. This is just a continuation of a friendly argument. Dr. McIlwaine seems to feel that improper food, such as he mentioned—pickles, lumpy bread, etc.—is responsible for gastric upsets. This is probably true to a limited extent. Most children will eat foods considered improper from time to time and in the great majority of instances will get away with it, as you all know. Where the food is the primary cause of the upset, I believe there will be very little or no rise in temperature. There will be vomiting and some looseness of the stools but very little rise in temperature; that is my experience. Personally, where I have found fever associated with vomiting and diarrhea, there has been some infection associated with it. Where the infection is not of the dysentery type, I believe the majority of these infections are localized around the nasopharynx. Where the characteristic symptoms of disease are vomiting and diarrhea associated with fever, a condition which lasts usually for one or two days or sometimes longer, it has been my experience that pharyngeal infections play a very prominent role. You often find redness of the pharynx and a little swelling of the eardrums, with fever, associated with the gastro-intestinal upset.

How does this upset take place? We see from time to time almost epidemics of vomiting and loose stools; I have seen it in family after family. Sometimes adults have it. In such cases the symptoms are due to the infection and are characteristic. Some children have a digestive apparatus of limited capacity. They get a little infection that might not upset an ordinary child but, because of this limited reserve, the slight infection will cause diarrhea and vomiting. The vomiting may be in part a reflex affair from the throat infection, but probably is chiefly the result of toxemia. The toxins absorbed from the infected focus cut down the secretion of digestive juices and so prevent proper digestion. Further trouble may result from bacterial action on the partly digested food.

There are one or two points about Dr. McIlwaine's treatment of dysentery that I think should be stressed. It is certainly necessary to feed dysentery cases. Some men, particularly the men around Boston, have urged fairly high carbohydrate feeding in these cases, because carbohydrate, as it passes through the intestine, is changed in part to acids by the action of bacteria, and the presence of acids renders the products of the dysentery bacillus less toxic. Another reason carbohydrates are useful is because they furnish easily utilized foods to help the body fight the infection. The protein milks are easily digested and do not irritate the inflamed gut, consequently they are useful in the treatment of dysentery.

Dr. Wilburt C. Davison, Durham, N. C.: Dr. McIlwaine has emphasized the two most important facts about intestinal disturbances. The first is that there is one definite group of gastro-intestinal disturbances such as bacillary dysentery, etc., and another group which may be due to hot weather, ingested foods, etc.—a heterogeneous group. The second important point is the giving of fluid to these children intraperitoneally, subcutaneously or intravenously. Diet, as he said, is a secondary matter. Transfusion is a very valuable aid, and the mortality would be reduced if blood transfusions were given more generally.

Dr. Sam Wilson, Lynchburg: There is one thing Dr. McIlwaine omitted, intentionally or unintentionally, to which I wish briefly to call attention. This was exemplified three or four months ago in a very interesting case of mine. I think in my whole experience it was the most intensely absorbing case I ever saw, particularly when I contemplate the accidental and dramatic cure. This child had every three or four weeks attacks of bloody stools until it was emaciated and wasted away. When I saw the child, it was dehydrated and the cheeks were sunken, like a baby with diarrhea. Everything was negative; the clinical examination of the child, the physical examination; everything was negative. I could not find anything that I could possibly think of that would fit that case. Occasionally, the mother told me, during the three months the child was sick, it would have attacks of obstruction almost simulating paralytic ileus. The nurse called me one night and said the child was suffering intensely. They had not been able to get the bowels to move for two days. I examined the child, and it was

apparently in great distress. I told her to give the child one drop of croton oil and if the child's bowels did not move in a half hour to repeat it. She called me presently and asked me to come over, saying she had something she wanted to show me. When I got there the child was perfectly comfortable. The nurse showed me a mass as big as my two fists. I took it down to the local technician the following morning and asked him to tell me what it was. After he examined it he found it was a wad of cotton about as big as my fist. How in the world that thing could fix itself in that child's intestinal tract for that number of months is incomprehensible to me. Of course, the question was cleared up immediately. I went back to the mother and asked her how the child got all that cotton into its stomach, and she said she had known for months that the child picked cotton off the bed and ate it. So if Dr. McIlwaine has another case of diarrhea with blood and mucus, and it fails to respond to orthodox remedies, then I would suggest giving a dose of croton oil, as possessing tremendous potentialities!

LIVER EXTRACT IN THE TREATMENT OF SPRUE, WITH REPORT OF CASE.*

By J. POWELL WILLIAMS, M. D., Richmond, Va.
McGuire Clinic.

Sprue is of such rare occurrence in Virginia that it seems fitting to give a brief description of the condition before discussing its treatment. Until the pioneer work of E. J. Wood,[1] of North Carolina in 1915, it was thought to occur only in the tropics save where cases were invalided home to northern climates. Since that time there have been many reports of typical cases occurring in patients who have never been outside the United States, though most of these have been in the southern part of the country. It is an afebrile, chronic disease characterized by glossitis, diarrhea, and progressive anemia, weakness and emaciation. The tongue[2] is inflamed and pink with congested papillae eroded patches and superficial cracks on the dorsum. The bowel movements occur for the most part during the night hours with complete cessation or marked diminution during the day. The stools are bulky, soft light yellow or grey in color, acid in reaction, of sour odor, and there is much gas mixed with the feces. They are composed largely of fat and also contain much nitrogenous material suggesting a pancreatic deficiency. The anemia of sprue is usually referred to as secondary, though the blood picture in well advanced cases is more often of the megalocytic[6] or primary type. The disease runs an irregular course, periods of comparative quiescence alternating with acute exacerbations. The question of etiology is still under discussion and will be avoided in this paper save to state that a pathogenic yeast, monilia psilosis, is found in the stools with great regularity.[7]

The many points of similarity between sprue and pernicious anemia have been commented on frequently in the medical literature during the past few years,[2, 3, 4, 5] and the most striking point of similarity is in the blood picture. As before stated, in advanced cases of sprue there is marked anemia of the megalocytic type which cannot be differentiated from that of pernicious anemia.[6] It was to be expected then, after the brilliant work of Minot, Murphy, and Cohn,[8, 9, 10, 11, 12] that liver therapy be given an intensive trial in sprue, especially in those cases showing an anemia of the primary type.

Bloomfield and Wyckoff[14] reported the first case successfully treated by the Minot and Murphy whole liver diet. Minot and Murphy[11] later reported a similar case; Baumgartuer[15] comments on its beneficial effect. E. J. Wood reported the successful treatment of two cases with liver extract No. 343 but no details are available.[11] B. K. Ashford,[16] of Porto Rico, reported favorable clinical results using liver extract No. 343 in conjunction with his special sprue diet, but commented only on the effect of the extract on the blood, assuming that his diet alone was responsible for clinical improvement other than in the blood. He noted that in cases showing the blood picture of primary anemia with erythrocyte counts below 2,000,000 per cmm., the bone marrow response was in every way similar to that seen in pernicious anemia cases treated with the extract; while in the cases of primary anemia in which the erythrocyte count was 3,000,000 or higher and in the secondary types of anemia there was no reticulocyte shower. Richardson and Klumpp[17] have reported the first case of sprue in which liver extract No. 343 was used with very little dietary restriction[18] save during the first few days when the patient's condition was critical. Their results were all that could be desired.

Case Report

Mr. S. G. W., white, age 69, was admitted to St. Luke's Hospital, May 18, 1928, complaining of shortness of breath, extreme weakness, dropsy, diarrhea, and pallor. His family history was negative save that his progenitors

*Read at fifty-ninth annual meeting of Medical Society of Virginia, in Danville, Va., October 16-18, 1928.

for the past three generations had all lived to be octogenarians. He had had the usual childhood diseases but no other illnesses of any kind up to the onset of his present trouble. He was of the old aristocracy of Virginia and all his life had eaten largely and well. It had been his custom, up to the prohibition era, to take three or four drinks of whiskey daily and frequently wine with his meals. Since prohibition he had not touched alcoholic liquors. It had been his boast for years that his bowels moved regularly and normally twice each day, once on arising and once after breakfast. To this he attributed his excellent health and digestion.

In 1917 it was necessary for his company to send him to Porto Rico to take charge of its branch there. For three or four months his health was excellent, then he began to notice that it was necessary for him to get up one or more times each night to move his bowels. The stools were loose and watery for the first three months but there was no fever, abdominal pain or tenesmus. He does not recall that his tongue was sore but he had some "fever blisters" in his mouth. He began to lose weight and became weak. During his last month the stools became even more frequent, sometimes seven or eight movements a night, and their character changed. They became light in color, soft and foamy, and of foul sour odor. The patient was astonished at the large bulk of the material passed; as he expressed it, "I passed at least three times as much by bowel as I took in by mouth". He finally went to a doctor who told him he had an incurable disease and ordered him home at once. He was told to eat citrus fruit in abundance, also eggs and toast, and to drink lots of milk. He took the next boat home and finally went back to his old work. During the next ten years he stuck religiously to the diet prescribed for him save that he ate a rare beef steak once a week. His bowels never moved less than twice a night and averaged about four times. There were usually one or two movements during the day. There was much discomfort from gaseous distention and he passed much gas by bowel. There were periods of acute exacerbation during which the stools became thin and watery and his bowels moved almost constantly, but there was never any fever, pain, or tenesmus, and no blood was ever noted.

About a year ago he began to notice an increasing disinclination to exertion, shortness of breath and pallor, but by this time he had retired and managed to get along fairly well. He had gotten so that he could not control his bowels well and frequently soiled himself. Six weeks before admission he took a trip to New Orleans and stayed two weeks. During this time he had an acute exacerbation of his trouble and became so weak that he could not leave the house. He thought that he had contracted influenza but there was no fever or respiratory symptoms. After returning home his course was steadily downward. His diarrhea became watery and kept him up the better part of the night. His shortness of breath and weakness was such that he could not come down stairs; he began to get dropsical and his color was ghastly. For the two weeks before admission he slept practically the whole time save when it was necessary to move his bowels. He thought he had lost about thirty-five pounds in weight during his illness.

On physical examination the following positive findings were noted. The patient was sluggish and drowsy though entirely rational. There was marked dyspnea and orthopnea. The mucous membranes and skin were very pale and cyanotic. The tongue was clean, beefy red in color with prominent fungiform papillae, and approached the cobblestone appearance in contrast to the slick, glassy, tongue of pernicious anemia. The heart was markedly enlarged, the right border being two inches to the right of the mid-sternal line in the third interspace and the apex at the left anterior axillary line in the sixth interspace. There were loud systolic murmurs at the apex, over the xyphoid, and at the base, and there was easily palpable pulsation of the enlarged liver. The pulse rate was 120 with normal rhythm. The blood pressure was 140/100. The lungs showed many moist râles throughout with fluid to the sixth rib on the right. The abdomen was distended, with tympany over the dome and shifting dullness in the flanks; a fluid wave was present. The liver edge was two inches below the costal margin. It was firm, very tender, and pulsated. The genitalia, lower extremities, and dependent portions of the body were markedly edematous. The reflexes were markedly exaggerated, but there was no spasticity nor were any of the pyramidal tract signs present. The sensi-

bility to touch and pain was dulled over the edematous areas but normal elsewhere. Co-ordination and position sense were normal above and below. Vibratory sense was normal. Station and gait were normal. No astereognosis nor adiadokokinesia. There were no subjective paresthesias.

The laboratory findings were as follows: Hemoglobin 18 per cent, erythrocytes 900,000 per cmm., color index one. Leucocytes 4,500 per cmm., polymorphonuclears 42 per cent, lymphocytes 56 per cent, eosinophils 2 per cent. The smear showed marked anisocytosis with megalocytes predominating. There was also marked poikilocytosis and polychromatophilia. No normoblasts nor megaloblasts were seen. Vital staining showed only an occasional reticulocyte. The mean diameter of the erythrocytes was 9.97μ and the dispersion was 6.2μ. The blood platelets were 150,000 per cmm. The bile index was 9 and the direct Van Den Berg was negative.

The urine showed a trace of albumin and a few hyaline and finely granular casts.

Blood chemistry showed 110 mg. of sugar per 100 c.c., 24 mg. of non-protein nitrogen per 100 c.c., and 8.5 mg. of calcium per 100 c.c. The blood Wassermann was negative.

Gastric analysis on May 24th showed free HCl 10, total acidity 42. On June 15th, free HCl 16, total acidity 30. On June 28th, free HCl 23, total acidity 45.

Electrocardiogram showed sinus tachycardia and myocardial degeneration.

Proctoscopic examination with 9-inch instrument showed the mucous membrane normal save for its pallor. There were no ulcers. No amoebae were found in the material removed.

The stools were very light yellow in color, pultaceous, frothy, and of foul acid odor. They were composed largely of fat as shown both by direct examination and after staining with Soudan III. There was a small amount of mucus present but no pus, and the guaiac and benezidine tests were negative. No ova or parasites were found. Monilia enterica was isolated from the stool by Dr. Frederick W. Shaw. This organism is claimed by Castellani to be identical with Ashford's monilia psilosis.

Treatment and Progress

For the first twenty-four hours in the hospital the patient was placed on a Karell diet, large doses of digitalis, and morphia. A transfusion in the face of a failing circulation seemed too dangerous, so it was decided to delay this procedure until the heart had been digitalized and pulmonary congestion had cleared up. In the meantime the patient was given four ounces of liver extract (Valentine) daily, the equivalent of about one kg. of raw liver, and orange juice and strawberries were added to the diet. The third night in the hospital the patient slept without morphia and was aroused only once by his diarrhea. Diureses had been marked, the pulse had slowed to 90 per minute, there was little moisture in the lungs, and the edema was subsiding rapidly, so on the fourth day the patient was put on our anemia diet which is similar to that recommended by Minot and Murphy save that

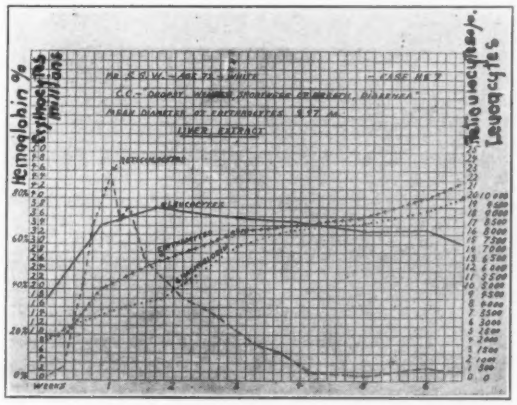

Chart I.—Response of reticulocytes, erythrocytes, hemoglobin and leucocytes to liver extract in sprue.

the fats are not restricted, more red meat is used, and no liver is included, liver extract being used to take its place. The patient took the diet with great hesitancy since it contained many foods which he had foresworn for the past ten years, but his improvement was spectacular. The sixth night in the hospital was the first in ten years during which he had slept the night through without a bowel movement, and since that time there have been no night movements. On the tenth day he passed his first formed stool and since that time they have been normal in appearance. As shown in the accompanying chart there were three days during the first three weeks on which there was no bowel movement.

The response of the blood to the liver extract was exactly like that seen in pernicious

anemia and needs no further description than the accompanying chart. On June 7th, the reticulocyte count returned to normal and the dose of liver extract was reduced to two ounces daily, equivalent to about 500 grams of raw liver. On August 1st, the dose was again reduced to one ounce daily, equivalent to about 250 grams of raw liver, where it has remained since.

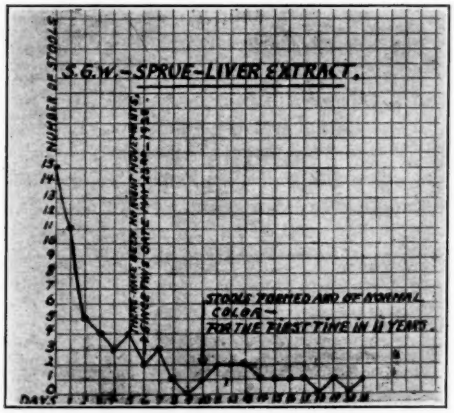

Chart II.—Effect of liver extract on frequency, consistency and color of stools in sprue.

Clinically, there is a most striking contrast between the patient's condition during the past few years and his present condition. He states that he feels ten years younger. He walks a mile or two every day just for the pleasure of the exercise. He has resumed his social activities which his frequent stools had made almost impossible during his illness. After the patient's heart had compensated and his edema and ascites had disappeared it was found that he weighed only 132 pounds which represented a weight loss of fifty-eight pounds. He has gained back fifteen pounds of this and further gain has been discouraged because of the condition of his heart muscle.

Comments and Discussion

The use of liver in the treatment of sprue is by no means new. Richardson and Klumpp[17] note the fact that it has been in use in Ceylon for years and that the British School of Tropical Medicine recommends liver soup. T. H. Jamieson[18] also reports splendid results with liver soup made by boiling a pound of liver in a pint of water for two hours. The cooked liver is then grated into the broth for thickening. This preparation is undoubtedly a crude aqueous extract of liver and contains the active principle which is responsible for bone marrow stimulation and regulation in the primary anemias,[13] and which seems to have had a very beneficial effect on the intestinal condition in this case. The only new idea suggested by this case is that in liver there seems to be some substance which has a specific effect on the pathological physiology both of the bone marrow and intestinal tract in sprue and that this substance seems to be the same one which is responsible for the remarkable remissions seen in pernicious anemia on liver therapy. If these conclusions be true, then the close relationship between sprue and pernicious anemia, which has been so often suggested in recent articles,[2, 3, 4, 5] would seem to be substantiated. It would seem also that the primary pathology in sprue is in the intestinal tract and that the monilia of Ashford is a secondary invader which may be gotten rid of by correcting the underlying intestinal pathology with liver feeding. The finding of the monilia in the stools of many pernicious anemia patients and in many other chronic diarrheas which could not properly be called either sprue or pernicious anemia, would also tend to place it in the role of secondary invader in sprue. The mycotic infection, however, undoubtedly brings with it a train of symptoms which alters the picture of the original condition, and it is perfectly conceivable that the mycosis may in time dominate the picture.

Since it has been shown that the substance in normal liver and kidney responsible for the bone marrow effect in pernicious anemia could not be classed as a vitamine, and indeed, from our present knowledge, seems to be a specific substance somewhat of the nature of a hormone or an internal secretion, the conception of sprue as a pathological condition caused primarily by a deficiency of this substance found in normal liver and kidney, with a superimposed mycosis, would seem to be tenable. The fact that the liver is usually much reduced in size and in many cases shows more marked atrophy than any other part of the intestinal tract is also suggestive, and the fact that liver therapy benefits these cases so remarkably seems to place the liver changes in the relationship of cause rather than effect.

This paper must not be taken to advocate

liver therapy only in the treatment of sprue, since it is the author's opinion that every proven means of combating the mycosis should be employed also; but from the facts here assembled, the necessity for correction of the primary abnormal physiology by liver therapy would seem to be the prerequisite to a permanent cure. The proof of the correctness of this conception of the disease lies in the therapeutic test. If cases so treated, do not relapse, as cases on all other methods of treatment are prone to do, then these conclusions would seem to be justified. Following up this idea, the patient, here discussed, has been instructed to stop his liver extract and has been placed on Ashford's sprue diet. He will be observed closely and a later report made.

Summary

1. A patient suffering from tropical sprue with the primary type of anemia which he contracted in Porto Rico, has been treated by large doses of liver extract without dietary restriction and the results have been entirely satisfactory.

2. A new conception of sprue as a primary deficiency in some specific substance found in normal mammalian liver and kidney with a superimposed mycosis is suggested.

3. It is further suggested that correction of this primary deficiency by liver therapy may be prerequisite to permanent cure, though in addition to this, every proven means of treating the secondary mycosis should be employed.

4. The proof of this conception will be established if cases treated in this way do not relapse as cases on other methods of treatment are prone to do.

Note:—The liver extract used in the treatment of this case was made by the Valentine Meat Juice Company of Richmond, Virginia, for and under the direction of the Departments of Medicine and Biochemistry of the Medical College of Virginia. The efficiency of this extract has been proved by its employment in the treatment of many cases of pernicious anemia, both at the Medical College of Virginia and in several other large clinics. A full report on this product will be made in the near future.

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Discussion.

Dr. William B. Porter, Richmond: One can not listen to a report of this kind without being greatly impressed with the significance of the facts presented therein. A discussion of pernicious anemia in conjunction with a discussion of sprue brings up so many interesting factors of a corollary nature—those conditions which have as their predominating manifestation megaloblastic anemia—that we begin to wonder whether we shall not have to reclassify many of our so-called primary and secondary anemias. Addison, in his description of pernicious anemia, drew very clearly the lines on which one should make the diagnosis of this disease. He specifically stated that the patient should have definite neurological phenomena and symptoms of posterior and lateral cord involvement and achylia gastrica,

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should not be undernourished but the subcutaneous fat should be well preserved, and that the patient should present a very definite lemon tint of the skin. At that time we had not advanced sufficiently far in hematology to describe in a clearly defined fashion the blood picture which we now believe to be characteristic of true Addisonian anemia. Undoubtedly there are many other conditions in which the Addisonian blood picture is present which are quite remote from the original disease which was described by this investigator. I refer to the anemia associated with the infestations of tape-worm, Bothriocephalus latus. Recently, a case was observed at Ann Arbor in which liver feeding was carried out with no attempt to relieve or remove the infestation. The reactions were exactly those following the administration of liver to cases of pernicious anemia. It is rather interesting to note in this particular type of disease that the hydrochloric acid curve is quite adequate. One could never associate the anemia in this disease with an achylia gastrica, and we all believe now that the achylia gastrica of Addisonian anemia is due to a specific type of chronic gastritis and that one need not expect a return of normal hydrochloric acid. What does all this mean? It probably means this, that there are various clinical conditions in which there is absent either primarily or secondarily that substance which promotes or allows the maturation of red cells, and this particular substance can be supplied by the feeding of liver or kidney or (to a lesser extent) muscle tissue predigested.

A good deal has been said this morning about the blood picture of pernicious anemia. I think one must get pretty clearly in his mind what is back of this blood picture. One of the authors classified this anemia as hemolytic. I do not believe, in the light of our present knowledge, that we are justified in saying that hemolysis is the primary factor in the production of any of those megalocytic anemias which have been spoken of this morning. The characteristics of bone marrow in various types of anemia were shown quite a number of years ago. When one looks at a normal bone marrow he finds there are scattered through the bone marrow little erythroblastic islands. The young cells tend to crowd toward the center, with the maturer cells coming toward the margin of these islands. These are scattered in beds of marrow fat. In pernicious anemia the bone marrow is exactly opposite; it looks as though one were dealing with a tumor of the bone marrow. The bone marrow is packed with young blood cells, and as soon as we give this unknown substance they immediately mature and are released into the blood stream.

RADIUM AND SURGERY.*

By HOWARD A. KELLY, M. D., F. A. C. S., Baltimore, Md.

I have come to Washington, N. C., at the behest of Dr. Joshua Tayloe, one of my warm old personal friends for about a quarter of a century. I was attracted, too, by the memories of the hospitalities experienced in the distant past and often renewed at the hands of Dr. John Rodman, the Drs. Blount, and the Drs. Nicholson, including my friend Dr. Dave and the promising next generation of Tayloes, not forgetting among others Aunt Marcia in her ripe old age and Miss Lida Rodman, the historian of Washington and things colonial. There still linger memories of the good old days when the world seemed young and teeming, of shooting geese and ducks down at Okracoke and of watching on a runway at a deer hunt over across the Tar River, near that very swamp where our valorous Dr. John, above cited, some years ago saw the big black bear in the road in front of him as he was hastening homeward one never-to-be-forgotten night at about one A. M.! Perhaps I should amend my statement in the interest of scientific accuracy and say that the horse, pulling the buggy and Dr. John contentedly homeward first saw that bear, for it was only when the horse began to kick up didos that the somnolent Dr. John awakened to the fact that an incoherent black wobbling mass was ahead forming an obstruction of some sort impeding traffic. I think I hardly need add that ever since that memorable date, Dr. John totes a big gun and is awake ready for action when in that locality.

As I write out my brief address before the Seaboard Medical Association, need I recall that the numerous progressive changes I found in Washington have not in any degree cooled the kindliness, the hospitality, the spontaneity, and the affections of the Washingtonians; I discovered in the hospitable home of Mr. Fowle where I was entertained a younger generation endued with all the virtues of their ancestors—no small praise in these days. Alas, only today, the sad news reaches me of the departure of dear old Dr. Josh, as he is lovingly called, after a long life of devoted service over a wide territory—a noble, big-hearted man, rich in the breadth of his varied experience which he has handed as a heritage to nephews of high ability. Washington will seem different without Josh's familiar hearty welcome and the solicitous interest which endeared him to his many friends. How appropriate here, as we bid farewell to so gracious and loved a form, to sound the lines of Halleck written about a hundred years ago on the occasion of the early death of his intimate friend Dr. Drake:

> "None knew thee but to love thee
> Nor named thee but to praise."

My purpose in writing about radium and

*Address given by invitation before the Seaboard Medical Association of the Carolinas and Virginia, at Washington, N. C., December 5, 1928.

surgery is to emphasize the fact that radium does many things far better than exsective surgery and that it also does a number of things surgery cannot do at all, and to urge that it is high time on all sides to take note of this new radium field and to give it every opportunity to do its legitimate work. By neglecting to use radium in its appropriate fields, one often does not simply turn to surgery as a suitable and equally effective alternative, but does actually condemn patients to unnecessary suffering, invalidism, and even to death, who might have been saved by the more effective remedy.

After twenty years' experience with radium, I feel well assured in the position I take, and I am ready to enlarge my theme with any one courteously inclined to differ.

I know no better way to present this subject than to review with you sundry groups of cases any man in general practice is likely to run across, touching which he would be likely to want information as to the use of radium. Let me premise by saying that radium is by no means co-extensive with X-ray therapy. The gamma rays of radium are far more effective. Therefore, affections which have proved utterly refractory to X-ray often respond promptly to radium. I venture to hope that my presentment of the matter will aid in securing an installation of radium in many clinics. Let us consider some of the groups suitable for radium therapy.

Cancers of the face are practically all radiosensitive; a rightly adjusted dosage clears up most of them, usually with a single treatment. Prompt and early treatment greatly enhances the chance of cure. Should one prove radioresistant, it calls for extirpation under local anesthesia with electrosurgery, a brilliant coadjutor in a long line of ailments.

I hardly think we realize even yet the enormous boon conferred upon our race by these facts stated in so few words. With the present quickened sense of the body politic as to the risks in neglecting a chronic sore on the face, we are not likely to see again those frightful raw, completely eaten-out faces, mouth, nose, and eyelids, with hanging eyeballs, which used to turn up occasionally, seeking euthanasia in our large hospitals. The advantages of radium are especially obvious when the lesion is in the neighborhood of Eye or Nose. Practically all cancers of the Lips are also extremely radiosensitive, yielding a permanent cure with but one or two treatments. There is no longer any excuse here for surgery with its unsightly deformity in the advanced cases.

The same can be said of Cancers of the Mouth, Tongue, and Fauces, only here more judgment and experience are necessary in adjusting and distributing the dosage and equalizing the crossfiring to secure an effective application and avoid irritation. This remarkably favorable radiosensitive group is notoriously unfacorable for exsective surgery.

In all the above, one must watch the Glands in the Neck and, if deemed advisable, make a clean dissection. Where there are solid fixed masses in the neck, radiation is often beneficial applied both directly over and by implantation under the integument.

From time to time, Cancer of the Larynx yields beautifully to massive well-distributed external radiation, having due regard to the lesser vitality of the cartilage.

It is a natural transition from cancers of the skin to Pigmented Nevi and other skin blemishes, on the whole, I think, better treated by electrosurgery. Only occasionally does a mole yield to radium. The caution is not wasted when I note that whatever is done must be radical and the outer zone of the extirpation must be laid well outside the extreme limits of the affection.

One of the most delightful experiences in the use of radium is its behavior with Angiomata. From the smallest to the greatest these are in a high degree sensitive to mild radiations. One should never use a heavy dosage, as it is pretty certain to delay further applications by the local irritation it causes, making additional treatments even impossible. *Poco a poco*, little by little, with the radium in moderation and after a few months or more, presto! the growth (for such it is) is gone.

Port wine stains are blanched in the same way, at one sitting. The temptation to do too much at a sitting is great especially when the patient is poor and lives at a distance.

Mixed cancer of the thyroid is remarkably responsive to ray therapy, which often even takes care of the recurrences after an unsuccessful operation.

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Breast cancer with a good operable risk is surgical; however, if for any reason, operation is out of the question or if the growth is too advanced, or if it is a matter of a recurrence after operation, then radium proves a great boon in a palliative way.

In massive ulcerative disease of the breast, great relief is afforded by the removal of the mass with electrosurgery followed up by judicious radiations.

One of the most astonishing revelations in radium therapy has been the control it has over cancer of the bladder; a large percentage of these heretofore hopeless patients have been cured over periods of years. Like all other cancer patients, they must imperatively be kept under observation for several years or more.

Cancer of the rectum, like cancer of the bladder, is another of the utterly unpredictable favorable groups for our ray therapy.

In both of these organs, fortunately, in large percentage the disease long remains localized, and advanced affections even to the end often show no metastases. Here, too, the adenocarcinoma melts away under effective radiations. Both groups also exhibit these several fortunate circumstances: first, in that adenocarcinoma yields readily, and, second, in that it lies on and in the walls of a viscus, and third, that it does not often metastasize early and, again, it is readily accessible.

Electrosurgery can play a large part cooperatively by removing the more massive portions of the disease (particularly with the acusector) leaving a well-circumscribed outline for treatment as the radium is applied effectively on all sides, especially over the margins of the area where the disease is spreading. The only difficulty lies in securing within each viscus a well-planned, effective adjustment limited to the area needing treatment. If the rectal disease is down in the ampulla, the application is often best made under the guidance of the finger, with the patient in the lithotomy position. Higher up, the knee-breast posture and conical or cylindrical specula are essential. When enough radium is available (one or more grams), either here or in the bladder effective treatments can be given in ten or fifteen minutes, to be repeated in the more extensive cases at intervals of a day or two, until the amount calculated for the whole area is reached.

Cancer of the vagina, so awkward to handle surgically, yields with surprising readiness with results which are permanent if the disease has not extended through into the parakolpium with fixation.

Cancer of the cervix constitutes an area where, by general agreement, at last, the profession has about decided that it is better to use radium than to operate, a rather surprising conclusion as these cervical cases are not an easy group to handle. It is, however, conceded on all sides that radium does at least as well as, if not better than operation, while it avoids the pain of the convalescence and its various accidents as well as the mortality of the operation *per se* which is no small matter.

Cancer of the body of the uterus is preeminently surgical; extirpation is always to be elected in the absence of any serious contraindication. It not infrequently happens, however, that one handling a large group of patients encounters individuals who either emphatically refuse an operation or who by reason of age or debility or some other complicating condition constitute a bad operative risk. In such, driven to the wall, I have been obliged to depend wholly on radium applied both directly within the uterus and suprapubically and through the sacrum *ab externo*, often with surprisingly good results. Almost invariably, there has been a marked improvement and occasionally even a cure has been effected. I venture to predict that we shall in time even here reach the point of relying wholly upon radium when the organ is not enlarged by invasion of the disease and when the tactile sense in the act of making the curettage suggests that the trouble is superficial and perhaps localized, as further confirmed by the gross appearance of the curettage and the microscopic examination. A woman so treated ought to be curetted again in six months for the microscope, however much she may have improved in the interval, in order to justify the conclusion that the treatment has been effective. She should, of course, be followed up carefully for several years.

Radium is far better than surgery in most fibroid tumors, exceptions being made where there is a reasonable doubt as to the diagnosis and when there is a complicating lateral inflammatory disease or an ovarian tumor. Touching the limitations of radium in this

field, there is no such rule of thumb, as many allege, that it is contraindicated because ineffective in large tumors extending above the level of the umbilicus. Before treating one ought always to curette to make sure that there is no cancer of the mucosa. If hemorrhages have been the trouble, it is my habit to tell the patient that they will cease and that the tumor will shrink and may even become insignificant in size and perhaps, as in a considerable percentage, disappear entirely, and that she shall rest content with any of these alternatives, and keep under observation.

Several errors I have made in my diagnoses in a large number of these tumors have not shaken my conviction that radium therapy is by all odds the best possible treatment for myomata.

SIMPLE BLEEDING UTERI at about the time of the menopause are practically invariably amenable to radium therapy. Unless other complications demand it, operation here is antiquated and unjustifiable and should be completely superseded by the simpler, safer procedure. This alone constitutes one of our greatest recent boons in gynecology, best appreciated perhaps by those of us who have in the old days operated repeatedly on many of these distraught exsanguinated women.

Of all the blessings, however, our radium therapy has brought in its entail and of all the startling revelations of its efficacy, not one, I venture to aver, either in this or in any other field, surpasses that of its efficacy in two diverse yet clinically somewhat similar diseases, classified here for convenience in discussing their therapy under one head—HODGKIN'S DISEASE and LYMPHOSARCOMA. No group of cases so startles the ray therapist and the patient himself as these often massive nodules which melt and speedily disappear under a well-planned treatment. I recall one of the first, an old aboriginal hailing from Missouri, who had a huge mass projecting like a penthouse out from his forehead, probably periosteal in origin; the whole thing vanished, apparently "evaporated," and was gone in a few days. The astonished patient asked me, awestruck, "Doc, where did it go to?" Both of these groups tend to recover permanently just in proportion as the disease is seen and attacked in its earlier stages. Later on, a permanent recovery is possible but less common; the immediate amelioration, however, is still remarkable and may last for months. Experience teaches that it is vitally important to watch for developments later in other parts of the body. The control of these diseases even in their distressing intrathoracic manifestations is equally effective.

In conclusion, let me recapitulate the lessons inculcated by experience. Our field is still new and, with more observation and better judgment coupled with judicious experimentation, there is a well-founded expectation that we shall witness such further refinements in treatment as will markedly improve results, especially as to permanency.

Again, let me place great emphasis on the vital importance of seeing the patient as early as possible and the equally important dictum of keeping patients for a long time under regular, skilled observation.

Our therapy often calls for the effective cooperation of general surgery and of electrosurgery. It not infrequently happens that an extensive fixed, infiltrating mass of disease shrinks down to one persistent movable nodule. This calls for prompt surgical extirpation or thorough electrosurgical coagulation.

Broder's classification of malignancies is valuable as a general guide, but from time to time, owing to individual differences in radiosensibility, those which seem least promising actually yield excellent results.

Tissues nearest the embryonic status are as a rule most responsive, to our great surprise bringing many of the worst risks surgically under control.

If radium had succeeded in only one of the groups I have mentioned, that decade in which it was discovered would deserve to go down to posterity as a landmark in the history of medicine. How thankful then we should be for such a long list and such heterogeneous affections brought under the control of these new agents.

Finally, if no case were ever cured, so excellent are the palliative results that I would go on using radium with the utmost satisfaction.

1406 *Eutaw Place.*

Drop a word of cheer and kindness,
Just a flash and it is gone;
But there's half a hundred ripples
Circling on and on and on.
—*Selected.*

CHRONIC ARTHRITIS.*

By J. LAWN THOMPSON, A. M., M. D., Washington, D. C.
Chief Medical Service, Providence Hospital; Consulting Physician, Casualty Hospital; Clinical Professor, George Washington University Medical School; Clinical Professor, Georgetown University Hospital.

Chronic arthritis is a discomfort to which the human being has been subjected from time immemorial, and, while the patient has suffered the bodily anguish, the physician has had the mental anguish. There is no condition that has had more consideration with less satisfactory results than chronic arthritis. Since the recognition of focal infection and the removal of such foci, the incidence of primary cases has been lessened and, if we can educate the laity to the advisability of surrendering to medical observation at the inception of joint discomforts, this stubborn disease may in time be able to be entirely eradicated. Unfortunately, most individuals will attempt homes cures and outside suggestions before they seek medical advice. In the treatment of this condition salicylates have by long odds been most beneficial. Thyroid and thymus extracts, sun baths, sand baths, hot spring baths, diathermy, autogenous vaccines, intravenous foreign proteins, radium, etc., have all had their trial. I have used them all with mediocre success. Many quack remedies have also had their turn and we cannot blame the sufferer, for one would naturally go to any extreme to get even a moderate relief from the severe, painful multiple arthritides. While seeking a remedy for this condition, Young and Youmans, of the University of Michigan, have been using orthoiodoxy benzoic acid intravenously in the treatment of chronic arthritis and have reported a series of cases which include gonorrhoeal, acute, atrophic and hypertrophic forms, which showed marked improvement in 56 per cent of their cases, moderate improvement in 23 per cent, slight improvement in 14 per cent, no improvement in 3 per cent.

Laboratory experimentation has shown that the organic compound, ortho-iodoxy benzoic acid, has a high germicidal action against staphylococci, streptococci, and gonorrhoeal arthritis, and arthritis deformans also has been claimed to have been improved in 64 per cent of cases. "This substance", quoting Millard Smith, "is in structure similar to the salicylates, except that it contains iodine and readily available oxygen. Its action is similar to the salicylates but is many times more effective". It may be given by mouth but is more effective when administered intravenously. Millard Smith, of the Boston City Hospital, following the routine of Young and Youmans, found beneficial results in the treatment of 33 cases. James E. Cottrell, University of Pennsylvania, reports a small series of cases, including acute, sub-acute, chronic, and gonorrhoeal infections, in which he feels that 80 per cent were benefited. Trauba, in the *Journal of the American Medical Association*, October 1, 1927, also reports a series of multiple infectious arthritis in which he noted 64 per cent improvement. It must be remembered that the use of the drug is in its infancy and no 100 per cent cures are claimed. Furthermore, all the investigators insist that routine examinations of the patient must be made, careful histories taken, all sources of infection removed, and, after the medical treatment which almost immediately gives relief from pain and induces relaxation of muscle spasm, orthopedic measures must be instituted, such as the straightening of deformities, putting parts in casts if necessary, massage, baking of the parts, and in some cases diathermy. Diet, also, plays an important role, we having used Friedenwald's arthritic diet. From my experience in a limited number of cases, I feel that much can be done to benefit these poor individuals. If we can do no more than arrest the progress of the disease and allay the pain, especially that of arthritis deformans, we will, indeed, confer a benefit upon mankind.

I will not impose upon you the history or the chemical properties of this drug, but will refer you to the excellent papers of Young and Youmans, of the University of Michigan, Millard Smith, of the Boston City Hospital, James E. Cottrell, of the University of Pennsylvania, and Trauba in the *Journal of the American Medical Association.*

Our method of procedure in treating these cases is that pursued by the foregoing writers, with the exception that we administer one-eighth grain of morphine ten minutes prior to the administration of ortho-iodoxy benzoic acid. This morphine is given to control the nervous apprehension and to minimize the reaction of the drug.

The apparatus that we use is a salvarsan gravity tube, capacity 500 c.c., about 1½ inches in diameter. Five feet of soft rubber tubing of very small caliber is attached, not only to

*Read before the Section on Internal Medicine, Medical Society of the District of Columbia.

the gravity tube but to a Kauffman Luer syringe. By this method of administration we can control the flow of the medication into the vein by lowering or elevating the container at will. I mention our method of administration, as I have seen others use 100 c.c., syringes which are unwieldly, tiresome to handle, and the time of administration cannot be controlled. *This control of the inflow is most important*, as the more slowly the drug is given the less the reaction, and *vice versa*. The drug may be given orally, or by rectum, as well as intravenously, but is not as effective as when given intravenously. One gram of the salt is dissolved in 100 c.c. of freshly distilled water or normal saline solution at body temperature The solution may be stirred to hasten the dissolving of the salt, but, according to the manufacturers, the drug must not be boiled. Care must be taken not to allow the drug to come in contact with the flame, as it is of an explosive nature. Some writers on the subject give a maximum time of ten minutes for the administration, but we have found that from twenty to twenty-five minutes reduce the reaction to a minimum. When the fluid leaks outside the needle insertion, the individual complains of burning pain similar to that noted when salvarsan escapes into the perivascular tissue. The reaction to the drug is manifested first by slight pain along the course of the vein, burning, itching in the mucous membranes of the nose, mouth and eyes, and constriction in the chest, griping pains in the bowels, diarrhoea, nausea and vomiting. These symptoms are only manifested when the drug is given rapidly. Only one of our patients had a severe reaction and this was due to the fact that our gravity tube was broken and we had to use a large 100 c.c. syringe and the drug was administered probably too rapidly.

Case Reports

(Normal Salt Solution is used before and after the oxoate).

Miss C. C., white, age 50, single, occupation nurse, was admitted to Providence Hospital April 15, 1927. Chief complaint—pains in the legs, head and knees. She had suffered from such pains for the past five years. About April 10th she stuck a needle in a finger of the left hand. Infection followed and she was sick about ten days, during which time she had chills and fever, pains in both lower limbs, ankles, and the large toe on each foot became very much enlarged and painful. The arthritis was treated from April 23rd to July 21st, during which time salicylates, physiotherapy, hot Epsom salts compacts and other remedies were tried. She had to have anodynes and opiates in some form every night to induce sleep. She was unable to walk on account of the intense pain and had not had her shoes on during this three months' period. On August 21st she was given 1 gram of oxoate intravenously. She had slight reaction but that night slept for the first time without an anodyne. The oxoate was repeated on the 21st and 27th of July, August 11th, 17th and 22nd. After the third treatment she was able to put on her shoes and began to walk, and having been in the hospital so long, she decided to go South to visit relatives and was discharged on August 31st, cured.

J. B., age 67. Chief complaint—stiffness and soreness all over the body, especially in the sacral region. Family history, negative. Severe rheumatism 1925. Present illness began December 26, 1927, with pain across back and shoulder; spread down back to the region of the hips. Feet then became swollen and painful. Admitted September 30, 1927, to the hospital. Salicylates were given a fair trial, with no great improvement. October 2nd, oxoate, 1 gram, was given. Repeated October 13th. Reaction not marked. The third dose was administered October 21st. Patient feeling very comfortable. The soreness and stiffness markedly relieved and the patient was able to walk around without the aid of a cane, which he had been using a long time. Left the hospital greatly improved.

J. Z., age 34. Admitted to the hospital June 22, 1927. Chief complaint—generalized rheumatic pains. Had G. C. infection recently. Present illness began June 3rd with pains in the shoulders, hips and feet; rapidly spread to arms, hands, hips and knees. Diagnosis, multiple arthritis. Treatment was routine hygiene, dietary and salicylates. No improvement noted. July 9th, 1 gram of oxoate was given intravenously, with slight reaction. Two days later marked improvement was noted, except the left knee. On the 16th, the same medication was administered with practically no reaction and the patient was feeling so well that he left the hospital on the 18th.

M. H., age 21, colored. Admitted October

11, 1927. Chief complaint, pain deep in bone of thigh, from hip to knee. Present illness began in April, 1927, having had severe sore throat. She was in bed four months with this painful limb. Condition at a standstill for three months. She entered the hospital, having to use a cane for support on account of the pain. Diagnosis—sciatica. Treatment, as in other cases, was hygienic, dietary and salicylates. She left the hospital October 16th, having refused oxoate treatment. She came back a week later and consented to the intravenous therapy. This treatment was administered twice a week for three weeks, at the end of which time the movement of the hip was almost perfect and the patient got around without the use of the cane, practically cured.

C. R., age 19. Admitted September 8, 1927. Chief complaint swollen and painful right knee. Present illness began August 24, 1927, with chills, fever, and general malaise. Used home remedies, until coming to the hospital, for pain in the knee. Diagnosis, acute arthritis. Treatment, magnesium sulphate compresses, external heat and anodynes. Practically no improvement. September 17, oxoate, 1 gram, given intravenously. Slight reaction. On the 18th the muscle rigidity lessened and the patient felt comfortable. On the 22nd and 26th, oxoate was repeated. Patient was markedly improved, the swelling had subsided and he was free from pain. Was discharged October 2nd and told to come to dispensary, but as he did not return, we infer that the condition was cured.

Mrs. E. B., age 57. Chief complaint was pain in right knee. Present illness began two years ago. Constant pain in knee and at times swelling and pain in wrists. Diagnosis—arthritis. Admitted to hospital July 15, 1927. Usual routine treatments were carried out with no improvement. On August 19th oxoate was used intravenously. Violent reaction was observed. Next day patient was freer from pain than she had been for months. Oxoate was repeated on the 23rd. At this time there was very little reaction. On the next day the pains in the left knee and left wrist had subsided. On September 1st, another intravenous treatment was administered, and the patient, feeling so much better, discharged herself in a markedly improved condition.

Mrs. M. M., age 50 years, had been suffering from pains in both knees and ankles for the past five years. Her obligations were such that she could not take the time for intravenous treatment with the possible reaction, so we decided to put her on an arthritic diet and administered the oxoate by mouth, using external heat every evening. After taking the medication over a period of two weeks and reducing her weight about ten pounds, she felt very much better. She then commenced to have intestinal disturbances in the nature of cramps and diarrhea which were attributed to oxoate. This was discontinued for a week and, when the disturbed intestinal symptoms subsided, the treatment was resumed and adhered to for two weeks longer. She has now been entirely free from pain for the past two months; has reduced about twenty pounds, and is feeling in excellent condition.

Mr. J. G., suffered from pain in the cervical region for the past five months, becoming progressively worse. Rotation and flexion of neck caused great pain, radiating to both shoulders. Feels a crackling sensation when moving head. X-ray shows cervical arthritis. Usual remedies administered with no result. Two treatments with oxoate gave him great relief. He can now flex and rotate his head with but little discomfort, and I feel a very few more treatments will arrest the condition. The diagnosis in this case is cervical spondylitis.

Dr. K. G., ill four years, had advanced arthritis deformans. All vertebrae and large as well as small joints were involved. Cannot lift his arms sufficiently high to feed himself. X-ray shows generalized arthritis. Was taking fifty grains of aspirin a day for pain. After second administration of oxoate, he could raise his arms sufficiently high to convey food to his mouth. A week later he could be lifted, and would sit on the side of his bed at meal time. The aspirin was discontinued after the second dose, and he suffered no discomfort. Unfortunately this patient contracted pneumonia and died. He was unquestionably markedly benefited by the treatment.

Those who have written before on this subject have given the sum total of their results, but I thought it would be interesting to cite the above cases to demonstrate the variety of arthritis that may be benefited by this treatment.

I wish to state, in conclusion, that we have been very careful in history taking, physical

examinations, the removal of all sources of focal infection, and have instituted orthopedic and other lines of treatment when indicated.

The Farragut.

ACRODYNIA—WITH REPORT OF SEVEN CASES.*

By CHAS. E. CONRAD, M. D., Harrisonburg, Va.

In 1919, Bilderback had a group of ten interesting cases which he considered different from any previously classified disease. He submitted case reports of these to Dr. J. L. Morse, of Boston, who in turn referred them to Dr. W. Weston, of Columbia, S. C. After careful study, Dr. Weston decided the condition was not pellagra, and applied the name acrodynia to the disease. In 1920, Byfield reported seventeen cases. Numerous cases have been reported since 1921. In 1914, Swift, in Australia, reported fourteen cases, and applied the name "erythredema" to them. Other names applied have been "pink disease" and "dermato-polyneuritis." The word acrodynia is derived from the Greek words meaning extremity and pain, or painful extremities.

Etiology.—Different views have been expressed as to the etiology, one, that it was a vitamine deficiency disease, but a majority believe it is a chronic intoxication secondary to some infection of the upper respiratory tract. Why, with the great prevalence of upper respiratory diseases, only a few develop acrodynia is not explained, except that it is possibly due to a specific organism. In one report I noticed two cases reported in the same family. An interesting fact in my seven cases is that four were secondary to measles or to an upper respiratory infection coincident with an attack of measles.

P. Woringer, in an article reviewing the observations that have led to the conception of acrodynia as a definite clinical entity, says:

"Although no underlying anatomic lesion has been discovered to account for the many symptoms, the author feels that the various phenomena may all be explained by a functional disturbance of the vegetative nervous system.

"The apathy, depression, fatigue, the abundant perspiration and salivation, the moisture and the coldness of the extremities, and the urticaria may be accounted for on the basis of a vagotonia. The insomnia, tremor, hypertension and tachycardia fit in well with an over-stimulation or derangement of the sympathetic system. Whether there is a toxin in the system that is elective for the vegetative nervous system or whether the glands of internal secretion are at fault is at best only a conjecture."

Symptoms. — The leading symptoms are hyper-irritability, a peculiar cyanotic dull red condition of the hands and feet, unlike pellagra in that it does not have a well-defined border, with a cold, clammy feeling—palms of hands are very moist—often with a moderate degree of swelling and desquamation and a miliaria type of rash. Photophobia is present to a varying degree. Four of my cases had it to a marked degree. With the hyper-irritability and fretfulness which they show even when held by their mother, there exists a sleeplessness and restlessness that would indicate a general peripheral polyneuritis affecting the sensory and trophic nerves.

Anorexia, weakness, and loss of weight also occur. I think, as a group, they are the most unhappy children I have ever observed.

Prognosis.—The prognosis for ultimate recovery is good, but usually the disease runs from three to nine months. Death, when it occurs, results from some intercurrent disease.

Treatment.—So far, treatment has been very unsatisfactory. Look after the general nutrition of the patient. Some have reported good results from ultra-violet radiation. Rodda reports excellent results from removal of tonsils and adenoids. So far, drugs have been useless.

Case Reports

Case 1.—This case occurred five years ago, and I was unable to find the history, but it followed chickenpox and acute otitis media and badly infected throat.

The symptoms were extreme photophobia, red, swollen hands and feet, marked sweating and desquamation, and the patient was very restless and fretful. Recovery in about three months.

Case 2.—J. P., May 14, 1926. Age, eighteen months; male; history of diarrhoea three weeks before signs of acrodynia; recovered in seven months.

The chief symptoms were fretfulness, crying most of day and night, hands and feet dull red, sweating—cold and clammy—with

*Read at the October meeting of the Medical Association of the Valley of Virginia.

desquamation, weak, sore mouth and loss of appetite.

Case 3.—J. C. M., May 14, 1928. Age, fourteen months; male; measles three weeks before onset of acrodynia. Has been sick four months; shows decided improvement, but not recovered.

The chief symptoms were fretfulness, irritability, photophobia, fine miliaria rash over body, hands and feet cold and clammy, dark red color and desquamating. Developed punched out ulcers on buttocks; blood Wassermann negative; appetite poor; diarrhoea. Much of time lies in flexed position, with straining, and has had prolapse of rectum. Markedly improved in last two weeks.

Case 4.—I. C., August 7, 1928. Age, thirty months; female; acute otitis media seven weeks before acrodynia. Recovered in eight weeks.

The chief symptoms were fretfulness, irritability, photophobia, hands and feet red, cold, skin macerated and desquamating for two weeks when seen. Stays in flexed position with straining, and at times a prolapse of rectum.

Case 5.—D. D., July 24, 1928. Age, eleven months; female; measles and acute otitis media two weeks before beginning of acrodynia. Recovered in seven weeks.

The chief symptoms were fretfulness, irritability, miliaria type of rash over body; hands and feet dull red, cold, clammy, with slight desquamation; loss of appetite, and weak.

Case 6.—Wm. W., August 22, 1928. Age, two years; male; had measles eight weeks before symptoms of acrodynia started. Recovered in four weeks.

The chief symptoms were miliaria rash over body, irritable, with crying spells; dull red swollen hands and feet.

Case 7.—A. B., September 30, 1928. Age, three years; male; no definite history of preceding illness. Has been sick eight weeks; improved.

Chief symptoms are weakness, poor appetite, photophobia, very fretful and irritable, fine miliaria rash on body; hands and feet red and cyanotic, cold, clammy, which marked desquamation.

One asks for sun, an' one for rain,
An' sometimes bofe together;
I pray for sunshine in my heart,
An' den forgits de weather.
—*Ruth M. Stewart.*

OPERATIVE ASPIRATIONS FOR A CO-OPERATIVE HOSPITAL ASSOCIATION.*

By JOHN BELL WILLIAMS, Richmond, Va.

Department of Administration, McGuire Clinic, St. Lukes Hospital.

What shall be the purposes of this newly organized Association? Shall it be just another of the thousands of groups who gather together with no specific plan or purpose; shall it adopt a high sounding ritual of impractical phrases; shall it content itself with attempting to solve only one or two of our major problems, or shall it adopt broad policies covering the entire field of hospital operation together with the provision of machinery to put its policies into practice?

With the kind permission of the President, I have restricted my paper to a discussion in general rather than in detail of a series of subjects that seem vital to successful hospital management. This, I do with the assumption that these general ideas may lead to concrete plans, upon which we may build a substantial structure.

Hospital Standardization.

Virginia hospitals were formerly known as homes for the sick and were operated on about the same plan as boarding houses. As years passed, these institutions developed into hospitals along entirely independent lines and without any idea of uniform plans.

The necessity for standardizing hospitals was at length recognized by the American College of Surgeons who crystallized the full duties and responsibilities of hospitals by setting up minimum requirements for official recognition by this College. This standard has been in effect for over ten years without much modification, but it has caused a great improvement in the operation of our hospitals. The College, realizing that extreme care must be taken not to destroy the initiative of any hospital, has made the requirements for recognition simple, practical, and adaptable to all types of institutions caring for the sick. Its objects are to promote better hospitalization in all its phases, that patients may receive the most efficient attenion that medical science can provide.

It is encouraging to know that eighty per cent of Virginia hospitals that were examined

*Read before the second meeting of the Virginia Hospital Association, at Danville, Va., October 16, 1928.

by the College are meeting these requirements. But what of the other twenty per cent and of those not examined at all? Would it not be a worthy achievement for this association to be the means of helping to bring them up to these requirements, so that Virginia would rank high among the states of the Union in providing the best facilities for the suffering?

Training Hospital Executives.

Just as the present hospital has evolved from a home for the sick, so have the complex administrative and intricate financial affairs of hospitals grown to such proportions that specially trained executives are now needed to replace the matrons. Nurses are becoming of more and more value to doctors and are given professional responsibilities never dreamed of years ago. Doctors are devoting more and more thought to study and investigation. The result is that neither nurses nor doctors have the time necessary for administering the business affairs of a hospital. Consequently, there has developed a new type of medical adjunct who devotes his entire time to hospital management. These executives are becoming recognized as profitable attaches to small as well as large hospitals. Marquette University, in granting honorary degrees to outstanding hospital executives and in establishing a college of hospital administration, has taken a great step forward along this line. While the training of such an executive is still in an evolutionary stage, it is generally believed that he should at least have some of the following qualifications:

1. He should have a professional point of view, with a knowledge of medical history sufficient for him to practice a system of ethics.
2. He must be capable of bringing well thought out plans to the hospital directors.
3. He must be able to carry out the wishes of the board with neatness and dispatch.
4. He should possess a mechanical turn of mind.
5. He must understand and supervise the calculation of balance sheets, cost figures, and records.
6. He must understand buying and market quotations.
7. He must feel a deep interest in community welfare, and be well versed in matters of public health.
8. He must know something of the science of education.
9. He should know something of medical jurisprudence.
10. He must not be buried in routine clerical work.

These executives always work under a governing committee of doctors from the staff which acts as a regulator. Hospitals must be organized into various distinct departments, such as that of dietetics; buying, storing, and issuing supplies; a training school for nurses; bookkeeping, accounting, etc. These departments are all intimately interwoven into the management of any successful institution. The manager must be responsible for the success of the hospital and cannot be so without sufficient authority to control all of these departments in so far as they have anything to do with the business administration.

It appears evident that a medical course, a nursing course, or a business course is not planned to prepare people for these positions. Hence, we may profit by asking our medical schools at Richmond and Charlottesville to consider the establishment of short courses of study to which we can send men and women who desire to take up this important work.

What It Cost to Be Sick.

There is probably no one question that is receiving more discussion than the subject of what it costs to be sick. Realizing the value of exact data, the American Medical Association has created a national committee to analyze this involved and confused situation. This committee is working on a five-year program. It is composed of private practitioners, specialists, United States Public Health representatives, state health commissioners, nurses, economists, and representatives from the general public. Its work is financed by the profession together with several large foundations. The budget for this investigation will be about seventy-five thousand dollars a year. This seems a lot of money to lay out for an investigation, but it shows the value of the desired end in the eyes of the profession.

This committee will study not only the cost of medical care to the family, but also the remuneration to the doctor. I am informed by a member of this committee, Dr. J. Shelton Horsley, that this survey will include the operation of hospitals. The value of this study to us can be seen from a similar survey made by the Department of Labor on the costs of medical and hospital care as applied to the

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laboring man. In showing that the cost of hospital operation has increased one hundred and thirty-three per cent from 1913 to 1926, it also shows that the cost to patients has increased only sixty-six per cent and that a further reduction has been made since the average length of stay in the hospital per patient has been reduced from fifteen days in 1913 to twelve days in 1926. In developing these interesting facts, this report further reveals that four Chicago hospitals and seven hospitals in different parts of Pennsylvania, all of which were examined for this particular report, now charge from $3.15 to $4.00 a day for ward beds which is about as much as many Virginia hospitals can charge for private rooms.

This opens up the whole question of hospital finance, a subject which has always demanded and will always demand our study and attention. The attitude of the public on this subject is based upon tradition. The hospitals founded during the early centuries of the Christian era were originally developed in connection with monasteries and were the outcome of the spirit of charity. Their purpose was to extend hospitality to the destitute and the homeless and to the traveller who had no shelter in case of illness. In England, until the nineteenth century they were for the poor only. In the United States, the earliest hospitals were likewise for those unable to pay.

After having regarded hospitals as charity organizations for so many hundreds of years, we can hardly expect the public, in one generation, to readjust itself and to pay for its actual hospital expenses as a matter of course. The prevailing opinion seems to be that the well-to-do are paying for their hospital services while the poor are being cared for by the state, city, county, or private contributions. This is an entirely mistaken belief. A properly managed private hospital which does not pay its stockholders a fair return in the form of rent for money invested in property, is not requiring its patients to pay for the whole cost of hospital care. When this interest is not paid to the stockholders, but goes to meet expenses of patients who are unable to pay, it represents a contribution on the part of the owner, just as though cash had passed as a personal donation.

The worthy man who chooses medicine as his life's work feels it a privilege to give of his time and talents to those who are so unfortunate as to be unable to pay for his services. This does not mean that he should be expected to cripple his efficiency by the continual financial harassment of providing them with a home, a bed, food, and a nurse.

A charity hospital or a semi-charity hospital necessarily has a deficit. Those who meet this financial deficiency may possibly presume that the more the deficit the greater has been the amount of good accomplished. This assumption may be entirely erroneous unless there is well founded reason to believe that the hospital has been properly managed, and evidence that all charity patients were unable to pay anything. The report of the United Hospital Fund, of New York, reveals, for example, that thirty years ago the hospitals under this fund earned only one-third of the total expense, while now they earn two-thirds. This increased earning is due to good organization and operation together with the substitution of a ward rate at or below cost for the wards, when previously all were practically free.

It seems, therefore, that this association should keep in close touch with this committee on "The Cost of Medical Care," since it will deal fairly not only with the doctors and hospitals, but with the public at large.

Bookkeeping and Accounting.

There is no one thing that adds to the successful management of a hospital more than a system of accounting as instituted by certified public accountants. From their reports one may study comparative statements by weeks, months, or years. These reports clearly outline the income by departments so that a budget can easily be prepared. They also show in detail the expenditures of the hospital by departments, thus serving as a thermometer to indicate when operating costs are running too high. The Duke Foundation has prepared a system of accounting for the hospitals with which it will become affiliated. A study of this system as well as other methods of auditing and accounting may indicate to this association the advisability of recommending a uniform system for us all.

Training Dietitians.

It has become as necessary to have a dietary department for medical cases as diabetes, pernicious anemia, nephritis, etc., and the preoperative and post-operative treatment of surgical patients as it is to provide pathological laboratories and X-ray departments for diag-

nosis. It is equally as important to have a trained dietitian to direct this department as it is to have a nurse to supervise the care of patients.

Dietitians as a rule are of two kinds, the over-educated and the under-trained. The over-educated speak of vitamins and psychological charts for servants, but know nothing of making good gravy. The under-trained often can boss servants and superintend good home cooking but know nothing of medical diets.

It is safe to say that our dietary departments spend about one-fourth of our annual incomes. In Virginia alone this amounts to hundreds of thousands of dollars a year. The difference of a fraction of a cent on each meal served each person each day may easily determine our profit or our loss in a year. The difference between the salaries of a housekeeper in the kitchen and a trained dietitian may seem great, but when one stops to consider that such a large part of the hospital expense goes down through this department, the importance of efficient management is obvious.

Our larger hospitals may well consider a plan of co-operation with our state schools of domestic science in arranging courses in dietetics, similar to those now given for training laboratory technicians. It is essential that applicants for special training as prospective dietitians have college degrees with home economics as their major subject. A practical three months' course would be somewhat in accordance with the following outline:

A. Theoretical Instruction.
  I. Dietotherapy:
    1. Nephritic—6 point, 8 point, 10 point, 12 point, etc.
    2. Diabetic—
      a. Books of instruction.
      b. Books of calculation.
      c. Teaching to patients.
      d. Teaching to nurses.
      e. Various diabetic clinics, hotels, restaurants, etc., in different cities.
    3. Anemia.
    4. Hyperchlorhydria.
    5. Hypochlorhydria.
    6. Obesity.
    7. High Calory.
    8. Cardiac.
    9. Sippy.
    10. Gastric and Duodenal Ulcer—convalescent.
    11. Lithæmic. (Purin-free).
    12. Anti-constipation.
    13. Hypertension.
    14. Karell.
    15. Children—different ages.
    16. High Mineral.
    17. High Vitamine.
    18. Low Fat.
  II. Outline the Teaching of:
    1. Theory of Dietetics to Nurses.
    2. The Practical Dietetics to Nurses.
    3. Dietotherapy.
B. Administrative.
  I. Menu Making for Various Groups.
  II. Buying—
    1. Food.
      a. Quality.
      b. Quantity.
      c. From whom.
      d. When to purchase.
    2. Linens.
    3. Equipment.
  III. Hospital Management and Supervision.
    1. General Kitchen.
    2. Dining-rooms.
    3. Tray Service.
    4. Diet Kitchens.
    5. Storerooms.
    6. Service and Servants.
    7. Bookkeeping, Records, Census, etc., (daily, weekly, monthly).
C. Practical Work.
  I. Serving of trays with nurses and maids.
  II. Making of menus and buying.
  III. Making out of reports to Director daily.
  IV. Recording all purchases (card system).
  V. Computing average costs per meal per person.
  VI. Checking up of all special diets (menus and trays made and served by nurses getting training in Diet Kitchen).
  VII. Visits to patients requiring special diets or adjustments.
  VIII. Checking up with physician, if required, progress of patients on special diets.
D. Laboratory Work. (Practical laboratory work in sterilization, urinalysis, etc.)

Hospital Supplies.

Hospital supplies are handled or mishandled in various different ways according to the efficiency or inefficiency of storeroom management. Some institutions have two or more storerooms, with or without proper supervision. Other hospitals seem to operate a system of "help yourself" to all available supplies as long as they are available, and a liberality of economic policy by which any employee may purchase goods. Many other hospitals operate along such hit or miss lines that no record is kept of goods received, exchanged, or returned for credit. No one person is authorized to be responsible for all purchasing, approving bills for payment, making charges for special articles to patients, or for charging departments of the hospital for goods received for general use. Operating in such an unsystematized manner, it is impossible for any institution to function on a budget or to hope to reduce operating costs.

Economy in buying is important and may

save an institution five or ten per cent, but perfect economy is to be executed only in the wisdom with which supplies are issued for use. As a concrete example, we may consider the purchase and use of gauze and cotton. It is true that the market fluctuates and that prices of manufacturers vary somewhat, but if this association, through the help of surgeons, could prepare in writing with illustrations a simple technique for internes to follow in dressing all classes of wounds, which, though eliminating all waste, would take the most effective care of patients' wounds, a tremendous saving might be realized each year. The point here is that the chief saving is not in buying but in the use of supplies. As far as expert information on hospital management goes today, the consensus of opinion seems to be that the most efficient manner of disbursing hospital supplies is that the ideal hospital should have one central storeroom operated under a full time storekeeper. From this department all purchases should be made and incoming goods checked. Here all supplies should be given out for use in the hospital on signed requisitions. Here a permanent inventory should be kept up-to-date. Hospital management is still in the experimental stage, and there are many gaps to be filled in even the best run hospitals. This association, through the combined wisdom of all the best opinions can easily arrange a simplified system which can expedite hospital treatment, avoid the red tape that often costs the patient so dearly by crippling nurses and doctors in cases of emergency, but at the same time stop waste and save money.

Physiotherapy Equipment.

Many hospitals are now considering following the Government policy in establishing departments of physiotherapy. This term, as defined by the Surgeon General of the Army, is "All such methods which are conducive to cure, such as . . . hydrotherapy, electrotherapy, and mechanotherapy, active exercise in the form of games and passive exercise in the form of massage". It includes many kinds of electrical appliances, light, heat, and water. There has been so much misinformation on this subject that cautious institutions, while realizing the importance of the department, hesitate to make heavy investments until recommendations are formulated by authoritative bodies. This association can render a great service in adopting policies concerning this question.

Other Problems.

There are many other momentous problems of hospital administration which might be mentioned, such as the training school and nursing, buildings, wages, the hospital pharmacy, the record room, floor equipment, ward inventories, and training for internes, as well as many important problems of a minor character. Enough has been said to indicate the advantages to be gained for this association provided we work unselfishly for our mutual benefit. The study of our problems, the making of recommendations, and the directing of their execution require much effort, time, and money. If we depend upon the activities of our members, there is no doubt that some good will be accomplished through reading papers and discussing subjects. If we intend to avail ourselves of the maximum amount of profit, we must drop the usual lines of procedure among medical societies and organize our forces, to a certain extent at least, along the lines of business.

It would be a great benefit if we could arrange to pay experts in business and hospital work from outside of the state to appear before our meetings and give us one or two days of intensive instruction in subjects pertaining to hospital management.

A Salaried Officer Desirable.

The conduct of the affairs of this association will require a great deal of time and clerical work. Our officers cannot afford to do justice to the work for the honor of the positions they hold. For this reason it may be well for us to consider the creation of a salaried official. Since a full time position will not be warranted at this time, it may be best to employ a part time official, one who is well versed in hospital administration and who will become our director or leader.

This association would undoubtedly obtain great reward from a survey of our hospitals similar to that made of all state departments for simplification and economy in state affairs. Such a plan is manifestly impossible at this time. We can, however, through co-operative association, gradually find a solution to many of our manifold problems.

Recommendations.

1. That this association provide the facili-

ties for aiding all hospitals in the state in meeting the requirements of the American College of Surgeons.

2. That one or both of our medical schools be requested to establish a course in hospital administration.

3. That provision be made in more of our hospitals for training dietitians.

4. That a committee be appointed to make recommendations for the establishment of physiotherapy departments.

5. That our meetings be made more profitable by adding lectures and demonstrations by paid expert hospital executives.

6. That a committee be appointed to consider the advisability of maintaining a central office under a paid part time executive.

7. That we look forward with confidence to the day when we can set up a standard of business administration equal to that set up by the American College of Surgeons for professional care.

THE VALUE OF RENAL TESTS IN THE CONSERVATION OF THE RENAL FUNCTION IN NEPHRITIS.*

By WILLIAM EDWARD FITCH, M. D., Bedford Springs, Pa.

METABOLISM IN NEPHRITIS: Degeneration, inflammation, arteriosclerosis and renal insufficiency are the four cardinal points of pathological interest in nephritis. The pathology of this disorder is responsible for an interlacing of various signs, symptoms and morbid processes which heretofore have been "seen as through a glass darkly", and is only now being made understandable. The most important feature of the subject is that renal insufficiency and its consequences form a symptom-complex, the signs and effects of which are now being appreciated with some degree of precision; while the part played by degenerative and inflammatory transmutations is still little understood. The four danger signals in chronic nephritis are (a) uremia, (b) edema; (c) renal insufficiency, and (d) arteriosclerosis (hypertension).

NORMAL RENAL PHYSIOLOGY: Physiologists tell us that both in development and structure the kidney is of mesodermal rather than of epithelial origin. The kidney is an excretory organ, concerned chiefly with the selective removal of relatively simple crystalloid waste products from the blood stream, and the maintenance of osmotic pressure and reaction of the blood. The synthetic products of the kidney are hippuric acid and "probably small amounts of urinary ammonia".

THE INTERNAL SECRETION OF THE KIDNEY: Bergman and other research workers have reported the presence of a pressor substance "renin" in kidney extracts. This substance was isolated chiefly in the cortical portion of the organ. It is soluble in normal saline solution and in alcohol and was destroyed by boiling. When injected hypodermatically in very small amounts, it causes a rise in blood pressure from 5 to 25 m.m. of mercury.

THE STRUCTURE AND FUNCTIONS OF THE KIDNEY: The physiology of the urinary secretion and excretion is an interesting subject and one that has not been determined with precision. It is a compound tubular gland consisting of the glomerulus and tubules of which there are supposed to be 2,000,000 such units in a normal kidney. The formation of the glomerulus peculiarly fits it for functioning as a simple filter. The tubules are constructed of epithelial cells of a type which are "consonant histologically with either secretion or absorption, or both". The vascular supply of the glomerulus exerts a close relationship to glomerular pressure and urinary formation and excretion.

THEORIES OF RENAL SECRETION: The most interesting and the most important aspect of renal function is the formation and excretion of the urine. Numerous theories by as many worthy defenders will be presented. Two schools of thought champion the following theories: (1) The vitalists uphold the secretion theory, and (2) The mechanists believe in the mechanical theory.

(1). Bowman, in 1842, advanced the secretion, or filtration theory; basing his deductions on the anatomical structure of the organs. Today the "vital" theory of Bowman has very strong support by many scientific adherents, who believe that water is secreted from the glomeruli, and the uriniferous products from the urinary tubules. Bowman and his followers hold that the secretion of water "aids the separation and solution of the uriniferous products". The Bowman adherents assume that the glomerular epithelium separates from the blood stream the water and salts of the

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urine by an act of secretion. The urinary tubules are not primarily organs for *absorption*, but their epithelial cells are actively secretory, separating the organic constituent, urea, from the blood.

(2). Ludwig, in 1844, advanced the mechanical theory, maintaining that the glomeruli act as filters and eliminate from the blood stream not only water, but also the solid constituents of the urine, the inorganic salts and the specific elements of urea. He held that Bowman's capsule was a simple filter which "allowed the passage of all the crystalloids of the plasma along with the water by physical osmotic pressure". It is held that water and some solids are reabsorbed by diffusion in the uriniferous tubules. The anatomical structure of the kidney lends itself to this mechanical theory; the efferent vessels to the glomeruli are smaller than the afferent vessels and on this account the pressure in the capillary tuft is much higher than in the capillaries. The great length of the urinary tubules (25 feet) has, by some investigators, been considered especially adapted for the reabsorption of fluid passing through them, but the physical laws of filtration, diffusion and absorption do not account for such a process. Serum albumin and egg albumin are both indiffusible through animal membranes, still the former pass through the glomeruli without escaping in the urine, and the latter is promptly eliminated. Sugar and urea, both diffusible substances, are present in the blood stream; the former is retained and the latter eliminated. If, however, the sugar content of the blood stream reaches more than 3 parts per 1,000, it is excreted in the urine.

Heidenhain, in 1874, offered a modification of Bowman's theory claiming that not only was water secreted from the glomeruli, but, in addition chlorides, urea and uric acid, and other uriniferous products were controlled by tubal secretion.

Cushney, in 1917, evolved the "modern theory" which includes the "mechanical" filtration theory by the glomerulus and the "vital" theory of resorption by the uriniferous tubules. He holds that "the useful substances as well as waste products are filtered by the glomeruli, but that the former are reabsorbed by the uriniferous tubules". Experimental research in support of both theories is abundant, but it seems that the concensus of opinion, at the present time a broad-minded survey of the subject, inclines toward the acceptance of Ludwig's theory of mechanical filtration.

Richard's researches have confirmed Cushney's theory of filtration through the glomeruli and reabsorption in the tubules. Therefore we are forced to regard the kidney as an organ of filtration composed of an innumerable number of filtration units, made up of glomeruli and their corresponding tubules of which only a small portion are actually active at a given time, the remainder resting when not mustered into action. When the work is light, numberless units are resting; on the other hand, when the work is heavy, the reserve units are called upon to help "carry the load". The minimum number of these filtration units necessary to "carry on" are in all probability only a small portion of the reserve in the healthy human being. Sufficient strain is rarely if ever present to require the full reserve of "filtration units" into united action. The ability of the kidney to "muster" into action the requisite number of filtration units to "carry the load" is the measure of kidney efficiency.

The Effects of Blood Pressure on Urinary Secretion: The structure of the kidney is directly dependent upon the rapidity of the blood flow. When the arterial blood-pressure falls below 40 mm. of mercury, following shock, hemorrhage or extreme failure of the heart muscle, the secretion of urine ceases. Increased blood-pressure and local dilatation of the renal vessels increases the rapidity of the blood flow. The administration of caffein will also increase urinary secretion. The kidney is a very vascular organ and very susceptible to the influence of diuretics. It is claimed that the influence of an efficient diuretic will, within one minute's time, send a volume of blood through the kidney equal to its own weight; which is nineteen times as great as the average supply to any other organs in the whole systematic circulation.

Acid Base Equilibrium vs. Kidney Function: The control and regulation of the hydrogen ion concentration of the body is one of the most important functions of the kidney. The acid end-products of metabolism draw heavily on the alkali reserve of the body which seriously disturbs the acid base equilibrium. Normally, the kidney function efficiently checks

the alkali destruction by secreting from 60 to 70 c.c. of normal acid daily. It saves the alkali reserve of the body by its effects on the phosphates, and by substituting ammonia as an alkali in the urine instead of more stable bases. The normal pH concentration of the blood plasma is slightly near the alkaline point $H=4x10,^{8}$ or pH=7.4. The pH of the urine varies from 4.8 to 7.4. Whenever, as is almost always the case, the urinary pH is below 7.4, the kidneys excrete products the retention of which in the blood would tend to lower its pH below that point.

Tests for Renal Efficiency: From the foregoing it is evident that the term "renal function", in the clinical sense, is not synonymous with kidney efficiency, but includes all those processes in the body that influence the quality and quantity of the urine that is passed. Therefore, in order to be able to conserve the kidney function in the diseased kidney, we must be able to determine the degree of impairment present. This can be done by the scientific application of a series of tests given herewith. The physician caring for nephritic patients must have a clear understanding of the normal renal function, when evaluating and interpreting the laboratory tests outlined below.

The important tests for renal function fall into three groups:

(a) Tests for renal function "as a whole";

(b) Tests to determine the anatomical area of impaired efficiency, tubules, glomeruli, or blood vessels;

(c) Tests to determine the power of the kidney to eliminate urea, sodium chloride, creatinin, uric acid and water.

Tests for renal function have been found very useful in obtaining an idea of renal efficiency. The phenolsulphonephthalein test is the one most widely used, and most to be relied upon; it has been of inestimable value in broadening our knowledge of nephritis, and is of the greatest importance to the physician who has only limited laboratory facilities at his command.

The Phthalein Test: Phenolsulphonephthalein is a bright red crystalline powder, not very soluble in water and alcohol, but readily soluble in the presence of alkalies. It is non-toxic, non-irritant locally, and is excreted with great rapidity, practically entirely by the kidneys. Its presence in the urine is noted within a few minutes after its injection.

Technic: One hour before the drug is injected, the patient is given 400 c.c. of water. One c.c. of a specially prepared solution made up of 6 milligrams of phenolsulphonephthalein is injected intramuscularly, usually in the lumbar region. At the end of two hours and ten minutes (ten minutes for absorption and two hours for excretion), the urine is collected. A 10 to 25 per cent solution of sodium hydroxide is added to the urine to make it decidedly alkaline in q. s. to make a liter; then the percentage of phthalein excreted is determined by comparison with the standard in a suitable colorimeter. The normal excretion of phthalein in two hours is 60 per cent of the quantity injected, though in many cases the normal will be 50 per cent.

Clinical Significance: The all important question now arises—What does a diminished excretion of phthalein signify? What anatomical division of the kidney is involved, tubules, glomeruli or blood vessels? Which of the excretory products, water, salt, urea, etc., is below normal? "Experimental evidence seems to indicate that the phenolsulphonephthalein is excreted principally by the tubules, but also to a slight extent by the glomeruli".

Many attempts have been made to associate phthalein elimination with one or more of the excretory products. It has been found that "the excretion of sodium chloride, water and urea do not follow phthalein while creatinin does; furthermore, it has been observed that the relative amounts of water and chlorides eliminated depend more upon the blood flow than upon the amount of kidney tissue present, while the importance of the influence of these factors is reversed in the case of creatinin and phthalein".

Clinical Value: The value of phthalein has been established beyond question. The normal excretion of phenolsulphonephthalein two hours after intramuscular injection is 60 per cent, though it has been found with diminishing values to zero; 25 per cent or less is to be regarded with serious prognosis. The application of the test requires very little equipment for its employment and no profound knowledge for its interpretation. Theodore Janeway in 1913, in summing up its value and importance, said: "The test aims at the solu-

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tion of the old problem, the prognosis, especially as a guide to surgical procedure. It is an admirable and trustworthy test and serves the purpose better than any thing else we possess today. From the medical standpoint the test is a rough qualitative measure of the "whole kidney function".

The consensus of opinion at the present time is that the percentage of phthalein excretion in nearly all types of nephritis depends largely upon the amount of actively functioning kidney surface. However, there are forms of nephritis—the paranchymatous—characterized by albuminuria, diminished salt excretion and edema, where the phthalein output not only exceeds the normal but may be found in greater quantities, even as much as 82 to 90 per cent. On general principles, then, we may be justified in saying that the severity of nephritis cannot always be measured by renal function alone. On the other hand, we are justified in saying that a kidney which fails to eliminate phthalein in the specified time is from the clinical standpoint renally insufficient, and a guarded prognosis should be given.

Schlayer's Test for Renal Function: He recommends "20 grams of *lactose* dissolved in 20 c.c. of distilled water. A solution of this concentration having been previously pasteurized at 75 to 80 C. for four hours on each of three successive days is injected, under antiseptic precautions, into a vein at the bend of the elbow". The urine is collected at hourly intervals, and tested with Nylander's solution until the reaction for sugar ceases to be positive. A normal individual will eliminate about 90 per cent of the milk sugar in less than four or five hours; if the glomerular function is impaired, the lactose excretion is prolonged and a smaller quantity will be recovered. *His potassium iodide test* is carried out by administering to the patient 0.5 gram of K. I., in solution, by mouth, and the urine is collected and examined every two hours for iodin. The average time in normal individuals for the excretion of iodin is forty-four hours, though Schlayer says "no observation less than sixty hours can be considered as an indication of delayed elimination".

There seems to be no established relation between kidney function and pathological changes based on the rapidity of lactose excretion. Schlayer thinks that *vascular nephritis*, acute and chronic, can be distinguished by lactose excretion; that the diminshed or increased excretion of urine is greatly influenced by the action of vasodilators upon the renal vessels, whether the latter are sensitive or insensitive to the former, and the normal excretion of iodides and chlorides. He further says "*tubular nephritis* is distinguished by the fact that the excretion of chlorides and iodides is delayed while the lactose and water output is practically normal".

After all the clinical facts are carefully considered, we must admit that the most valuable single test for the estimation of "total renal function" is the *phthalein* test, which gives a trustworthy insight of the "total renal function" in all types of nephritis, acute or chronic. It shows the quantity of the drug (dye) eliminated through the kidney in a definite time. It also shows the extent and severity of the kidney lesion to be in direct proportion to the quantity of phthalein found in the urine within a given period of time.

The Value of Blood Chemistry Tests to Determine the Relation of Urea to the Total Non-Protein Nitrogen of the Blood in Nephritis: The total non-protein nitrogen is made up of the sum of various substances derived from the digestion and disintegration of the protein in the dietary. The urea, uric acid, creatin, creatinin, amino-acids, go to make up the greater portion, if not the entire amount of non-protein nitrogen (Mosenthal). The urea of the blood is the most popular of the chemical tests used to determine the relation of non-protein nitrogenous constituents in nephritis.

The comparative value of uric acid, urea, and creatinin in the blood of nephritics has been proven to be of inestimable value in judging the clinical progress of renal insufficiency. In summing up a "comparison of these non-protein nitrogenous substances in the blood and urine, it has been found that the kidney can concentrate the creatinin 100 times, the urea 80 times, and the uric acid only about 20 times". Uric acid in the blood is one of the earliest signs of renal insufficiency. Creatinin rises above normal values in the circulation, only in the last stages of nephritis. An increase in uric acid in the urine indicates a slight degree of renal insufficiency, but a rise in the blood creatinin is a danger signal of *marked deficiency* of renal function.

The metabolism of creatin in nephritis has not been given a great deal of attention. The presence of creatin in the circulation is of no great clinical importance, but may be of value in prognosticating the course of protein metabolism in nephritis. A rise in the blood creatin indicates an increased disintegration of protein, more particularly of muscle protein.

We incorporate herewith the "Blood Chemistry" report of a case of chronic interstitial nephritis—contracted kidney.

THE CREATIN VALUES OF THE BLOOD COMPARED WITH THOSE OF SOME OF THE OTHER NON-PROTEIN NITROGENOUS CONSTITUENTS. THE INCREASE OF BLOOD CREATIN OCCURS ONLY WHERE RENAL INSUFFICIENCY IS ADVANCED.

DIAGNOSIS	Milligrams per 100cc. of Blood			
	Creatinin	Creatin	Urea Nitrogen	Uric Acid
Normal	1.7 to 2.3	3.5 to 4.8	4.5 to 15.	1.0 to 2.6
Mrs. B. Chronic Nephritis	1.7	12.4	34.	5.

The creatinin was found to be normal.

The creatin was found to be in excess of the normal, indicating a diminished ability of the blood to change creatin chemically or to an increased production, suggesting an increased disintegration of protein.

The urea nitrogen was found to be "higher than normal", indicating that the renal excretory formation has been definitely curtailed.

The uric acid was found to be fifty per cent above normal, indicating impairment of the renal function, suggesting the advisability of reducing the proteins and purins of the dietary.

The increased concentration of urea in the blood is a compensatory phenomenon "to provide sufficient pressure to cause its excretion through a damaged outlet; under certain conditions accumulation occurs" (McLean).

Test Day Dietary for Renal Function: Tubular degeneration exists with glomerular and arterial sclerosis in an endless variety of combinations, and it is only through a knowledge of the relative derangement of the individual functions that we are able intelligently to direct the management and treatment of nephritis. Much of the recent progress in our study and treatment of nephritis had its stimulus in the methods of the determination of kidney function by the qualitative estimation of excreted chemicals and dye stuffs, as used in the various tests just described.

The following *test meal*, proposed by Mosenthal "as suitable for the use of the general practitioner", is a very admirable qualitative

MOSENTHAL NEPHRITIC TEST DAY DIETARY[1]

All food to be salt-free from the kitchen.
Salt for each meal to be furnished in weighed amounts (below).
All food or fluids not taken to be weighed or measured and charted.
Allow no food or fluid, except at meal times.

Breakfast 8.00 A. M.	Dinner 12 Noon	Supper 5 P. M.
Boiled oatmeal 100 gm.	Meat soup 180 cc.	Two eggs, any style
Sugar, ½ teaspoonful	Beefsteak 100 gm.	Bread, two slices 120 gm.
Milk 30 cc.	Baked potato 130 gm.	Butter 20 gm.
Bread, two slices 120 gm.	Green vegetables q. s.	Tea 180 cc. / Sugar, 1 teaspoonful 200 cc. / Milk 20 cc.
Butter 20 gm.	Bread, two slices 120 gm.	Fruit, stewed 150 gm.
Coffee 160 cc. / Sugar, 1 teaspoonful 200 cc. / Milk 40 cc.	Butter 20 gm.	Water 300 cc.
Milk 200 cc.	Tea 180 cc. / Sugar, 1 teaspoonful 200 cc. / Milk 20 cc.	
Water 200 cc.	Water 250 cc.	
	Tapioca pudding 110 gm.	

8 A. M., next morning (no food or fluid during the night), after voiding, return to regular meals.

Patient to empty bladder at 8 A. M., and at the end of each period, as indicated below.

The specimens are to be collected for the following periods in properly-labeled bottles.

One capsule of sodium chloride, 2.3 grams, to be furnished at each meal. Any salt not consumed to be saved and returned with the bottles and sent to the laboratory.

[1]Dietotherapy, Vol. 3, by the author.

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test of the renal function, as measured by the specific gravity, salt, nitrogen and water excretion in two hourly periods. Determination of the presence or absence of renal impairment is possible by the use of this "test day dietary".

THE SPECIMENS OF URINE ARE TO BE COLLECTED FOR THE FOLLOWING PERIODS:

8 A. M. to 10 A. M.	12 Noon to 2 P. M.	4 P. M. to 6 P. M.
10 A. M. to 12 Noon	2 P. M. to 4 P. M.	6 P. M. to 8 P. M.
		8 P. M. to 8 A. M.

This dietary contains approximately 13.4 grams of nitrogen, 8.5 grams of sodium chloride, 1,780 c.c. of fluids and a considerable quantity of purin material in meat, soup, tea and coffee, and it is on the mode of excretory response that the study of renal function depends. This is the most dependable and trustworthy test for determining renal function. "We know the exact *food* and *fluid intake* by the use of this test-day nephritic diet. The water output in the urine is meticulously measured every two hours, and the specific gravity is closely noted in order to watch out for the presence or absence of hyposthenuria". (The blood chemistry previously done gives the percentage of nitrogen and chloride content of the circulation). The chemist's report on the urine will show the nitrogen and chloride content of the urine.

The following (laboratory) report on the case of chronic nephritis previously mentioned clearly illustrates the urine concentration test in this case:

This case of chronic interstitial nephritis, on which the above various tests were made serves to illustrate their value and necessity in determining renal function.

I. The phthalein test showed 40 per cent elimination (normal 50 to 70 per cent) of the drug within two hours, which is indicative of renal insufficiency.

II. Lactose test showed that the excretion was not completed for twelve hours (the normal being four to five hours). Such delayed lactose excretion indicates disease of the renal vessels, glomerulonephritis: arterial nephrotomy with contraction (contracted kidney).

III. The potassium iodide test showed excretion delayed for sixty hours (normal forty hours), which indicates that elimination through the renal tubules was faulty.

IV. The blood chemistry test showed urea nitrogen to be higher than normal, indicating that the renal excretory formation was definitely curtailed.

V. The urine concentration test showed the maximum nitrogen concentration to be below normal, but not necessarily pathological. This patient had been under careful treatment for three years, with a treatment designed to conserve "kidney function". She had the most careful supervision as to diet, exercise, rest

URINE CONCENTRATION TEST.

Patient: Mrs. B. Time	Volume, c.c.	Specific Gravity	Nitrogen %	Nitrogen Gm.	Chlorides %	Chlorides Gm.
10 A. M.	270	1.012	0.50	1.35	0.41	1.11
12 Noon	99	1.007	0.28	0.28	0.26	0.26
2 P. M.	120	1.006	0.28	0.34	0.17	0.20
4 P. M.	60	1.021	0.75	0.45	0.81	0.49
6 P. M.	190	1.014	0.60	1.14	0.60	1.54
8 P. M.	101	1.018	0.63	0.62	0.94	0.95
8 P. M. to 8 A. M., next day	580	1.018	0.62	3.60	1.02	5.90
	1420			7.79		10.45

The Mosenthal urine concentration test for renal function yields the following results on the urine collected during this dietary:

The specific gravity variation 14, which is normal.
The maximum specific gravity 1.021, which is normal.
The nocturnal urine volume 580 cc., which is normal.
Sodium chloride maximum concentration 1.02%, which is normal.
Maximum nitrogen concentration 0.75%, which is below normal, but not necessarily pathological.
The total sodium chloride elimination is 10.45 grams, which is high, and must be explained by a high chloride reserve referable to carbohydrate fermentation. The few casts are the only evidence of renal irritation.

and sleep. She had a strict dietary, and one day each week a protein-free dietary, and on another day, each week a salt-free dietary.

The points of special interest in this case are: (1) markedly fixed low specific gravity; (2) diminished output of salt and nitrogen; (3) the tendency to polyuria; (4) night urine increased in volume, of low specific gravity and low nitrogen percentage; all of which indicate renal insufficiency in a chronic interstitial nephritis (contracted kidney).

This patient has had chronic interstitial nephritis for many years; three years ago the urine was loaded with albumin, and there were many casts. There was considerable puffiness under the eyes and marked edema of both lower extremities. She suffered from morning headaches, her blood pressure was 100-165, and occasionally she was annoyed with ringing in the ears. When she came under my observation, a careful physical examination was made, the tests above described were made, and a diagnosis was arrived at of chronic interstitial nephritis. I realized the necessity of placing her under a strict regimen and directed a treatment which would conserve her already impaired "kidney function".

Treatment to Conserve Renal Function: The plan of treatment to conserve "kidney function" in an already impaired kidney, is kidney rest, as far as possible. This can be accomplished, *first*—by the restriction of all drugs which would irritate the delicate kidney tissue, the more important of which are potassium chlorate salol, carbolic acid, turpentine, salicylates, lead, phosphorus and alcohol; *second*—where there is a solution of the continuity of the skin, the applications of the following drugs should be avoided, viz., turpentine, mercury, iodoform, balsam of Peru, pyrogallic acid and preparations of tar; *third*—prolonged exposure to wet and cold should be carefully avoided, and a residence in a warm dry climate advised, where the patient can spend a part of each day out of doors, since sunshine and fresh air are desirable factors. The advantage of a dry, warm climate is that it influences the dilatation of the peripheral vessels and increases elimination through the skin, which would be the opposite in a wet, cold climate. The daily loss of water through the skin in a dry, wram climate is much greater than we could secure in a colder climate by the use of artificial sweats. It must be understood that climate does not cure these chronic nephritics, but it adds to their comfort and may prolong their lives by preventing acute exacerbations and lessening the tendency to uremia.

Rest in bed is of primary importance; chronic nephritics should stay abed until midday. This practice insures continued uniform warmth of the body surface, limits body nitrogenous waste to the minimum, puts less work on the heart as there is almost always more or less myocardial insufficiency, which should always be kept in mind.

Cruonotherapy: It is very essential in all cases of chronic nephritis that free bowel elimination be secured. Free catharsis increases the elimination of nitrogen from the system. von Noorden makes the assertion that "normally 10 per cent of the nitrogen ingested leaves the system through the evacuations, but in uremic patients with diarrhoea, the elimination will reach 30 per cent". The choice of a cathartic narrows down to the sulphates, which produce watery stools; chloride cathartics are harmful, where there is evidence of salt retention. The Bedford Magnesia water, according to methods of administration and temperature, produces free catharsis. Osler, in his Practice of Medicine, says "chronic nephritic patients derive much benefit from an annual visit to certain minerals springs, such as Bedford Springs in Pennsylvania, and Saratoga in New York".

The Restriction of Fluids in Nephritis: The practice of the past has been to allow large quantities of water to "flush the kidneys", in nephritic cases. It has been shown by von Noorden and others, in recent years, that excessive water consumption is more often harmful, rather than beneficial. The Mosenthal "test day dietary" will indicate the quantity of fluids the patient can metabolize; the *intake* should never exceed the *outgo*. In every case of chronic nephritis where elimination is impaired, as shown by the percentage of renal edema, water restriction is imperative. Such patients should, as a rule, ingest only about 1,000 c.c. of water daily. If the urine is scanty and edema is pronounced, only one-half this amount should be allowed. Patients free from edema should once a week have a flushing-out-day using as much as 2,000 c.c. of a mild, bland mineral water.

Sodium Chloride Restriction: In all forms

of chronic nephritis associated with renal edema, restriction of sodium chloride is of momentous importance, even imperative. Salt retained in the tissues demands water to maintain it in its proper molecular concentration, the result being edema. A safe rule to follow in nephritis is to allow the patient only the amount of salt demanded by the tissues, which is from 2 to 3 grams. A rigid salt-poor dietary will contain about this quantity. It is almost a physical impossibility to have a *salt-free* diet, since the foodstuffs contain sodium choride in their natural state.

Balneotherapy: There is no question of the value of free diaphoresis in chronic nephritis. The relief obtained is due to the dilatation of the peripheral vessels, thereby relieving the heart; and also to the dilatation of the pores of the skin, allowing elimination of poisons and toxins, and thereby relieving the kidney of a part of its load. Profuse sweating also lowers blood pressure and relieves cardiac dyspnea due to hypertension. Various methods are used for inducing free diaphoresis. In our balneotherapeutic department, at Bedford Springs, we use the electric cabinet bath for this purpose: a cold towel is placed around the head of the patient and the sweating continued for fifteen minutes or longer, followed by a "hot pack" in which the patient lies for ten to twelve minutes, gradually cooling off. Then an alcohol rub completes the treatment, with a moderate massage. The quantity of water lost in a profuse sweat such as this will often be as much as one liter. It has been shown that the elimination of solids in this amount of sweat will range from 8 to 9 grams, of which 2.86 grams will be sodium chloride, and 2.08 grams nitrogen.

Dietotherapy: The old practice of an exclusive milk diet in chronic nephritis has been abandoned. With the increased knowledge of the functioning power of the kidney, a more liberal dietary is now permissible. Another reason for abandoning a strict milk diet is that the caloric requirements—three quarts of milk—was too severe a tax on the kidney in glomerular nephritis.

DIETARY FOR CHRONIC NEPHRITIS.

ALLOWED:

Soups—Vegetable or fish, broths with rice or barley.

Fish—Raw oysters or raw clams, fresh broiled fish.

Meats—Eat sparingly chicken, game, fat bacon and ham.

Farinaceous—Stale bread, whole wheat bread, graham bread, toast, milk toast, macaroni, rice, cereals.

Vegetables—Cauliflower, cabbage, mashed potatoes, lettuce, mushrooms, water cress, spinach, celery, turnip tops.

Desserts—Ripe raw fruits, stewed fruits, rice, tapioca, bread and milk puddings, tapioca peach souffle, junkets.

Beverages—Toast water, weak tea, coffee, pure water, Bedford Limestone spring, peptonized milk, Horlick's malted milk, fresh buttermilk, plain sweet milk, whey, clabber, cream cheese, cottage cheese, and unfermented grape juice.

FORBIDDEN:

Fried fish, corned beef, hashes of all kinds, stews of all kinds, pork, veal, heavy bread, batter cakes, lamb, mutton, beef, gravies, meat extract, beans, peas, malt and spirituous liquors, and all alcohol, ice cream, pies and pastry, chowchow, chutney and all condiments, onions, asparagus and all salty foods.

SALT-POOR DIETARY.

Breakfast:

Bread 60 grams, orange juice 200 c.c., butter 40 Gm., cream 30 Gm., farina 50 Gm., sugar 30 Gm., coffee or tea 180 c.c.

Luncheon:

Bread 40 Gm., butter 20 Gm., egg one, potatoes or carrots 125 Gm., cream cheese 20 Gm., sugar 30 Gm., rice 50 Gm., cream 30 Gm., tea 180 c.c.

Dinner:

Bread 50 Gm., butter 35 Gm., farina 50 Gm., cream 40 Gm., cream cheese 30 Gm., olive oil 30 Gm., lactose 8 Gm., sugar 30 Gm., potatoes or carrots 75 Gm., buttermilk 200 c.c.

At luncheon or dinner allow in addition a moderate amount of tomatoes, lettuce, cauliflower, fresh spinach, beets, squash, oranges, grapefruit, peaches, sweet grapes, pears, apples, melons, jams or honey.

Approximate food values: Protein 35 Grams, (5 or 6 Gm. nitrogen) calories 2700, chlorides about 1 gram—15 grains.

LOW PROTEIN DIETARY.

Breakfast: 6:00 A. M.:

Coffee or cocoa 120 c.c., orange juice 200 c.c., rice or oatmeal cooked without salt 60 Gm., half grapefruit.

Forenoon Luncheon, 10:00 A. M.:

Milk 120 c.c., or cocoa 180 c.c., salt free toast 60 Gm., one orange.

Luncheon, 12:00 noon:

Small quantity of any of the following vegetables cooked without salt: Tomatoes, cabbage, cauliflower, beets, spinach, carrots, squash, young beans, lettuce.

Afternoon Luncheon, 4:00 P. M.:

Milk 180 c.c., orange juice 200 c.c., water 180 c.c.

Dinner, 7:00 P. M.:

Salt-free toast 120 Gm., one egg, tea with milk and sugar 180 c.c., baked apple, or stewed fruit, 75 Gm., peach or tapioca pudding 100 Gm.

When care is taken in determining the type of nephritis by the use of the various tests outlined, and the exact anatomical portion of the impaired organ decided upon, we can conserve the renal function and spare a diseased kidney unnecessary labor, by directing a suit-

able dietary and furnishing the food distinctly appropriate to the needs of each individual case.

Bedford Springs Hotel and Baths.

THE DIAGNOSIS OF ECTOPIC PREGNANCY.*

By JAMES W. DAVIS, M. D., F. A. C. S., Statesville, N. C.
Davis Hospital.

The ovum may be fertilized and lodge at any point from its passage from the ovary to the uterus. The most likely point, however, in ectopic pregnancy is in the middle or outer part of the tube.

The location or site of the ectopic pregnancy governs to some extent the character of the symptoms and the rapidity of their onset.

The classical symptoms of ectopic pregnancy are those which accompany a rupture of the tube after the ovum has reached a certain size. This usually produces a terrific shock and intra-abdominal hemorrhage. The patient first experiences a sudden, severe pain in the pelvic region, usually localized either on the right or on the left side and accompanied by severe shock. The patient often faints and may be found lying on the floor with a weak, rapid pulse and signs of shock and internal hemorrhage.

In these cases there is usually the history of having had children—the last, one to three years before. Often the periods are absent for a month and then there is irregular bleeding with lower abdominal pain which may or may not be severe enough to be noticed.

The rupture of a tube already distended almost to the limit by an ectopic pregnancy may be hastened by any unusual exertion or strain, such as moving furniture or reaching down and lifting a heavy child. Many patients give a history of some unusual strain or exertion preceding the onset of symptoms of internal hemorrhage due to a ruptured tube. Often though there may be no history whatever of exertion. The rupture may take place while the patient is lying quietly in bed.

The classical case is usually recognized promptly, but the early and the atypical cases must often be studied very carefully in order to recognize them and even then it is sometimes difficult.

An early diagnosis before the tube has ruptured enables us to reduce the mortality to a very low point. An early operation before there has been any hemorrhage or shock is attended with very little danger.

Recently, I have seen a number of cases of ectopic pregnancy in which the only symptoms were slight bleeding which persistently followed the last period. In one case it had persisted for over six weeks. The patient complained of slight pain in the right pelvic region which was colic-like in character and intermittent. The pelvic examination did not show very much trouble, but there was tenderness over the right tube on gentle palpation. A number of cases give almost similar histories with similar findings. Operation was advised in all of these cases and done promptly. The ectopic pregnancies in these cases were located about the middle third of the tube or about the junction of the middle and outer third. In none of these cases was the tube ruptured. (In suspected cases palpation should be light on account of the danger of rupturing the tube by heavy pressure.)

Tubo-ovarian and abdominal pregnancies are rather unusual and can be best illustrated by recounting previously the history of a typical case of this kind:

The patient, a comparatively young woman, the mother of two children developed nausea and vomiting. She thought she was pregnant. Two or three weeks later she had a sudden attack of pain and flooding and had what she thought was a miscarriage. Her family doctor was called in but was not exactly satisfied with the condition found and sent her to the hospital at once. A light curettement was done but nothing was found.

She was very tender over the abdomen but a pelvic examination did not reveal any mass in the region of the pelvis. The patient was watched very carefully and a few days later a tumor could be detected in the abdomen in the region of the appendix. In her case, however, the appendix had been removed years ago. Then a slight jaundice developed. The nausea and vomiting persisted.

A diagnosis of probable ectopic pregnancy was made and an operation advised and this was done at once.

On opening the abdomen the ovum was found well developed and lying between the fimbriated extremity of the right fallopian tube below and the omentum above. Each was attached to the ovum just like the hands would

*Read before the Iredell-Alexander County Medical Society, March 13, 1928.

be in holding a basket ball and it was evidently receiving nourishment, both from the tube and from the omentum. A small amount of blood had escaped in the abdomen and this accounted for the jaundice. The patient was given a thorough examination prior to operation to rule out all other possible causes of the symptoms.

In all cases of ectopic pregnancy a carefully elicited history and a thorough examination will usually enable one to make a diagnosis. There are certain border line cases, however, in which a definite diagnosis cannot be made, but where the evidence is strongly in favor of an extra-uterine pregnancy. An immediate operation should be advised rather than to wait for confirmation by a rupture of the tube and have the patient run the chance of losing her life. Where pregnancy occurs near the junction of the tube and the fundus of the uterus, rupture occurs earlier and the hemorrhage is usually greater. The farther out toward the ampulla the ova lodges, the greater size it can usually attain before rupture occurs and the less the pain.

Conclusions

1. Any persistent pain in the pelvic region accompanied by uterine hemorrhage or hemorrhage without pain whether it be slight or severe should always demand a very careful and thorough examination.
2. The only treatment for ectopic pregnancy is immediate operation.
3. Where a definite diagnosis cannot be made, but where there is strong presumptive evidence of an ectopic pregnancy, the abdomen should be opened at once. More often than not an ectopic pregnancy will be found.

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EXPERIENCE WITH SPINAL ANESTHESIA IN ONE HUNDRED AND FORTY-THREE CASES.*

By JAMES McLEAN ROGERS, M. D., Soonchun, Korea.
Physician in Charge, Alexander Hospital.

During the last ten months we have used spinal anesthesia a hundred and forty-three times in this hospital (Alexander Hospital, Soonchun, Chosen). We wish to report this series together with our experiences and impressions on this method of anesthesia in suitable cases.

The ideal anesthetic should be safe, should be easily and pleasantly induced, should last long enough to allow the usual operations to be completed under it without undue haste, should not have any unpleasant after-effects, and should give good relaxation in abdominal operations. We do not know any ideal anesthetic when measured by all these standards, but, after trying out spinal anesthesia, we believe that in most operations below the waistline, as well as in many in the upper abdomen, it is the anesthetic of choice.

At first we used novocaine 0.1 gm. dissolved in about two c.c. of sterile normal saline and introduced it into the spinal canal, using this with satisfaction for about six weeks. Then some ampules of stovaine that we had previously ordered arrived and we used them for awhile. The formula was one used in the Church Missionary Hospital, at Old Cairo, Egypt, for many years with entire satisfaction, and consisted of stovaine 0.1 gm., sodium chloride 0.1 gm., and distilled water 1 c.c.

Although we used these for about three months, we were not altogether pleased with the results. We noticed that when mixed with the spinal fluid in the hypodermic syringe prior to injection it turned a milky white, thus causing us some worry. Then on mixing it with some red blood cells we found that invariably hemolysis occurred within ten minutes, indicating to us that at least to some degree this solution might be irritating to the delicate tissues of the spinal cord. On several occasions, although introduced low down in the lumbar region, we found anesthesia complete up to the nipples, and one day a patient became faint, almost lost consciousness, so we became convinced that we could not control this agent sufficiently for it to be perfectly safe. Stovaine solutions are of a low specific gravity and diffuse rather readily in the spinal fluid. We decided that we had better discontinue stovaine except in special cases and go back to novocaine, which, incidentally, is only about one-third as toxic as stovaine.

We decided to try out a formula suggested by Li, using for the average adult the following:

Novocaine 0.13 gms. (gr. ij).

*Read at the meeting of the Korean Missionary Medical Association, Seoul, Chosen (Korea), February 8, 1928.

Caffeine Sodio-Benzoate 0.2 gms. (gr. iij). This we dissolve in about two c.c. of sterile normal saline just prior to using.

We are still using this formula with entire satisfaction, and prefer it to the novocaine alone. This solution, when mixed with the spinal fluid, remains clear; it does not hemolyze red blood cells, and thus makes us think that it must be far less irritating than the stovaine solution we had been using. Also, Li says it has a higher specific gravity than has spinal fluid, and is therefore subject to the influence of gravity when introduced into the spinal canal. We have seen this clinically demonstrated often. One time especially when we had injected the solution high up in the spine (in the 12th dorsal space), the patient began to gasp and her respirations became slow and labored, these symptoms disappearing almost immediately when we raised her head and shoulders a little. We have introduced it several times at this level, both before and since, without any cause for anxiety, and just mention this because it happened once and to show how easily this solution seems to be controlled. The caffeine acts as a stimulant, and the patient is spared a sensation of sinking, with the mild shock symptoms, that sometimes accompanied the introduction of novocaine alone. We think this combination is a good one for the purpose.

Now, to go into the details of using this combination in inducing spinal anesthesia, doubtless the ideal way would be to have sterile ampules ready for use, but, to save expense, we weigh out the novocaine and the caffeine-sodio-benzoate and make up the solution separately for each operation. We have two large spoons boiled with the instruments, and, when ready to operate, we place a little sterile normal saline solution into one of these sterile spoons, boil this, add the powder which readily dissolves in the hot water, and again boil for a few moments, after which we take it up in a hypodermic syringe that fits the lumbar puncture needle. Then, using the other spoon, we boil two or three c.c. of 1 per cent novocaine solution which is to be used in anesthetizing the skin and tissues down to the spinal canal before introducing the needle into the spinal canal. We prefer for the patient to sit on the table with his back towards the operator, but as a matter of fact it is just about as easy to place your needle in the canal with the patient lying on the side. We select a spinal interspace at a somewhat higher lever than that on which we wish to operate if it is an abdominal operation, of if for an operation on the perineum or lower extremities, the usual fourth lumbar space, or any other that may be convenient, will be satisfactory. Have your spinal needle of as small a calibre as possible; this we think is most important, in order to avoid any unnecessary leakage of the spinal fluid into the tissues. By preventing loss of spinal fluid, you prevent many a post-operative headache. After making the puncture, we slip the obturator back into the needle while turning to the table to pick up the hypodermic of solution, and take every possible precaution to avoid loss of spinal fluid, for this pays. Inject the anesthetic solution, withdraw the needle, quickly pinch up the skin, or rub it a bit, then either seal with collodion or place a bit of sterile gauze over the puncture wound, and lay the patient on the back with the head, also the shoulders, if convenient, elevated. Usually in a few minutes the patient will tell you that his feet are tingling or feel dead, and generally by the time the operator has washed up and has prepared the operative field the anesthesia is complete and will last from an hour to an hour and a half. In the rare instances when the anesthesia will begin to wear off before the operation is completed, either another puncture can be done, if convenient, or, as we do, a small amount of ether or chloroform can be given. We have had to supplement spinal anesthesia with a general anesthetic only five times in this series, and for only a very short time in each case—from five to fifteen minutes of shallow anesthesia, never long enough to cause any of the usual after effects of a general anesthetic.

We think it is wise to take the blood pressure at intervals, and if it drops sharply—below a point determined upon before beginning the operation, say down to 80 or 90 mm. systolic, depending upon the general condition of the patient of course—we order a half c.c. of adrenalin extract solution given intramuscularly. We gave adrenalin fifteen times in this series, and never more than one time* in an operation. Each time after giving it the pressure rose sharply and maintained a satis-

*Once since writing this, in an intestinal resection we gave adrenalin twice with full satisfaction as to its effects. It was given the second time when the pressure again began to fall, at a time when we had to handle the intestines rather roughly.

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factorily high lever throughout the remainder of the operation.

Incidentally, any fall in pressure that is going to occur will probably be noted within fifteen minutes after introducing the solution into the canal. We have seen one exception to this, in an abdominal operation during which we had to handle the intestines more roughly than we like to; in this case the blood pressure fell markedly, but not sufficiently to cause us to give adrenalin. We have never yet had to give adrenalin because of the poor condition of the patient, but each time gave it because the blood pressure had fallen and with a view to preventing any untoward symptoms developing. Ephedrine is recommended[3] for this also, but with this we have had no experience.

All authorities seem to agree the solution is fully absorbed in a few minutes, so that by the time anesthesia is complete in an abdominal operation the patient can be safely placed in the Trendelenburg or any other desired position. We have operated often with the head lowered without observing any ill effects.

It might be interesting to give here a summary of our operations under spinal anesthesia, in this series:

Gastro-enterostomy	6
Cholecystotomy	1
Inguinal hernia (one badly strangulated)	3
Ovarian cysts (usually very large)	2
Hysterectomy	3
Appendiceal abscess	4
Appendectomy (simple)	1
Suspension of the uterus	3
Psoas abscess	1
Intestinal obstruction (intussusception)	1
Tumor, bladder wall, enucleation	1
Bladder stone, supra-pubic incision	1
Laparotomy for mesenteric tuberculosis	9
Perineorrhaphy, etc.	2
Operative deliveries (forceps, etc.)	20
Vesico-vaginal fistula	7
Repair, atresia vaginae (due to cauterization of the vagina by native methods)	6
Dilatation cervix uteri	6
Hemorrhoidectomy	7
Anal fistula	9
Amputation of strangulated, prolapsed rectum	2
Circumcision	2
Urethrotomy (external)	1
Hydrocele (bottle operation)	1
Inguinal adenitis	3
Amputation, thigh	7
Amputation, below knee joint	2
Osteomyelitis of tibia	6
Osteomyelitis of femur	3
Excision of small bones of foot	3
Deep abscesses in thigh	11
Fracture femur	1
Curetting leg ulcers	2
Excision, exostosis os calcis	2
Abscess, knee joint, drained	1
Abscess, hip joint, drained	2
Carbuncle, buttock	1

In doing these operations we have used novocaine alone thirty-six times, stovaine fifty-nine times, and the novocaine-caffeine-sodio-benzoate combination forty-eight times.

Now to consider some of the objections to spinal anesthesia. Probably the drop in blood pressure is the most serious. In this series we have the blood pressure readings taken at frequent intervals throughout the operation, recorded in eighty-six operations. There was no appreciable change, at least not exceeding 10 mm. recorded in fifty-seven cases. A definite rise of 20 mm. or more is recorded in three cases. Eleven cases showed a drop of 20 mm.; six cases had a drop in pressure of 30 mm.; three cases dropped 40 mm.; two cases showed a drop of 50 mm.; two showed a fall of 60 mm.; one fell 70 mm., and one 90 mm. (all these in the systolic reading). Most of the cases that showed a large fall in blood pressure were in cases which at the beginning of the operation showed a relatively high pressure, and the fact that we only gave adrenalin fifteen times among the twenty-six cases showing a heavy fall in pressure shows that this relatively high pressure had been previously noted and allowed for in determining to what point we would allow the pressure to fall before resorting to adrenalin.

In spinal anesthesia, as in the use of any general anesthetic, a low blood pressure (under 100 mm.) is considered a poor operative risk. Yet we did a gastro-enterostomy in a patient who before the operation had a systolic blood pressure of only 95 mm., which dropped to 55 mm. a few minutes after introducing the solution, but, when adrenalin was given, it rose to 120 mm. and remained there for the rest of the operation. The patient left the table in excellent condition and made an uneventful recovery. In another gastro-enterostomy case, the systolic pressure was 100 mm. before start-

ing with the diastolic reading 90 mm., and, although we obtained perfectly satisfactory anesthesia and relaxation, his systolic reading only fell 5 mm. Up to the present time we have had no anxiety as to any of our patients. Even the one who showed the truly great fall in blood pressure of 90 mm. showed no clinical evidence of impending trouble, and he received adrenalin not because of his clinical condition but because his pressure had dropped so much we did not want to take chances. We do feel, however, that unless the blood pressure is kept track of, some danger might develop, consequently, we urgently recommend keeping a record of the blood pressure readings, made at intervals throughout the operation. Recording the readings insures that they are taken, and thus adrenalin or ephedrine can be given whenever indicated.

Another possible objection to spinal anesthesia is respiratory embarrassment. We have observed this once only, as already mentioned, and this was remedied immediately by raising the head and shoulders of the patient. By some over-sight, the pillow under the patient's head had been left out in this case, but the respiration and condition of the patient so quickly came back to normal that we had no time in which to get anxious.

Occasionally during an abdominal operation when rough handling of the stomach or intestines is necessary, a mild, transient nausea with some retching or vomiting has developed. Each time this has passed off as soon as the tugging was stopped. To date we have not had any post-operative vomiting except in the case operated on for intestinal obstruction, where, of course, it might be expected.

We have observed headache, sufficiently severe for the patient to complain of it and to ask for relief, ten times in this series. Each time aspirin (one to three doses) brought relief, except in one instance when it persisted for two days. In this case the patient was very anemic and had suffered intensely with headache for days before admission to the hospital, and the headache passed away gradually as his condition improved following the operation.

There was some increase in the number of patients who had to be catheterized post-operatively when we used stovaine; this we have not observed when using novocaine. A large number of the operations in this series were operations on the perineum or lower abdomen involving the pelvic organs. With this type of operation there is naturally an increase in the number of patients who have to be catheterized. We try to have the patient urinate immediately before the operation, and then can wait twenty-four hours, if necessary, before ordering the catheter used.

Sometimes the fact that the patient is conscious might be considered an objection, especially if he is nervous. We usually order morphine about thirty minutes in advance on all serious abdominal cases. Ordinarily it does not seem to be needed in operations outside of the abdomen. The morphine, together with the fact that the area anesthetized is totally insensible, helps the operator to get away with any necessary work, even with a very nervous patient. Try to keep the patient's confidence; he can be definitely assured that there will not be the least pain and that he will feel far better afterwards because of using spinal rather than general anesthesia. We have not had any trouble whatever because the patient was conscious; on the other hand, this is a distinct held at times.

Now to consider the advantages of using spinal anesthesia, which we think, in suitable cases, out-weigh the disadvantages.

In the first place, there is not the post-operative nausea, malaise, etc., which is almost the rule following a general anesthetic. In this series, as already stated, there was no post-operative vomiting. Unless the condition for which the operation was done forbids it, fluid, and if desired, suitable food, can be immediately administered. This we do often, with good results.

There seems also to be much less surgical shock. Theoretically this should be expected, since all the nerve paths to the brain are blocked. The absence of shock, and the general sense of well-being of the patient is most comforting after a long serious operation. The relaxation of the abdominal wall is well nigh perfect, saving time for the patient and the operator, and helping to make the operation successful.

It is a good anesthetic in cases ordinarily designated as "bad risks"—cardio-renal cases, pulmonary tuberculosis, and such like, for it has no influence on the kidneys, lungs, or other organs.

We have several patients on whom we op-

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erated, once using a general anesthetic, and then, at a later time, again operated, using spinal anesthesia. These are all unanimous in expressing their preference for the spinal.

It is a convenient method; the operator injects the anesthetic, then moves on to the operation. It is a cheap anesthetic, as we do it, costing only a few cents each time, saves personnel. You do not have to have your anesthetist present; also, the patient is returned to the room fully conscious, and so does not have to have a nurse with him for a time.

It is a safe method of anesthesia, especially for operations below the umbilicus. We have had far less uneasiness with spinal anesthesia than with a like number of general anesthesias, and, unhesitatingly, we are ready to say that in this hospital spinal anesthesia is safer than a general anesthetic, especially when administered by unskilled anesthetists, by whom we often have to have it given. This, of course, is purely a local factor, but how many of us have always skillful anesthetists at our command?

To sum up our opinion after using spinal anesthesia in this series of operations, we believe it is the anesthetic of choice in practically all cases for operations below the waist-line, in adults and older children, and is often to be preferred in operations on the upper abdomen. In this, however, as in any other method, experience counts, and the longer you use it, the better results you will have and the better satisfied you will be with it.

In closing, I want again to mention some precautions. Use a small needle to make the puncture, and avoid all possible loss of the spinal fluid; then, after injecting the novocaine, keep the patient's head and shoulders elevated for a few minutes. Of course, all possible care must be taken in the technique to keep everything perfectly sterile. We believe that, as we have used it, we have in spinal anesthesia a very valuable method of inducing anesthesia at our disposal.

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GONGYLONEMA, WITH REPORT OF A CASE.

By HERBERT W. LEWIS, M. D., Dumbarton, Va.

Gongylonema is a filarial nematode, varying in size from 7 mm. to 140 mm. in length, and from .1 mm. to .5 mm. in diameter, that infects the mucous membrane of the alimentary tract of cattle, sheep, hogs, rats, chickens and man.

Species. Gongylonema Scutatum in cattle is very widely distributed, having been found in North and South America, Europe, Asia, Africa, and Australia. Gongylonema Pulchrum in hogs has been found in North America, Europe and Africa. Gongylonema Neoplasticum is found in rats and other rodents. This parasite sets up proliferation of the epithelial elements, and inflammation terminating in distinct carcinoma with metastases. Gongylonema Ingluvicola is found in chickens in the Philippines and Florida. Gongylonema Hominis in man has been found in Italy and the United States of America (Arkansas, Florida, Georgia and Virginia).

Some authorities state that the different species are so similar that it seems very probable that there is only one species, varying in size and characteristics in different hosts. If, as has been suggested, all these species are identical, the fact has a very important bearing on human pathology.

Fibiger's research and experiments have proven that the parasite plays a definite part in the production of cancer in rats. Sanbon believes it a cause of cancer in man. One other authority states that cancer can be lessened by prevention of gongylonema.

Intermediate hosts are dung-beetles, cellar-beetles, cock-roaches, and meal-beetles. These insects swallow the eggs, which develop to the larval stage in the insect and are taken into the mouth of the final hosts whence they are taken up by the lymphatics.

HABITAT.—These parasites are found in the mucous membrane of the esophagus in animals, in the mucous membrane of the mouth, esophagus and cardial end of stomach in rats, and in the mucous membrane of the mouth in man. They are found in sinuous galleries in animals and rats; but in man they migrate into the connective tissue of the mouth, a characteristic peculiar in man.

*Read before the Richmond Academy of Medicine, January 22, 1929.

Occurrence in Man.—Dr. Leidy, of Philadelphia, in 1850, described a human parasite as Filaria Hominis Oris, which he found in the mouth of a child. It possibly was gongylonema.

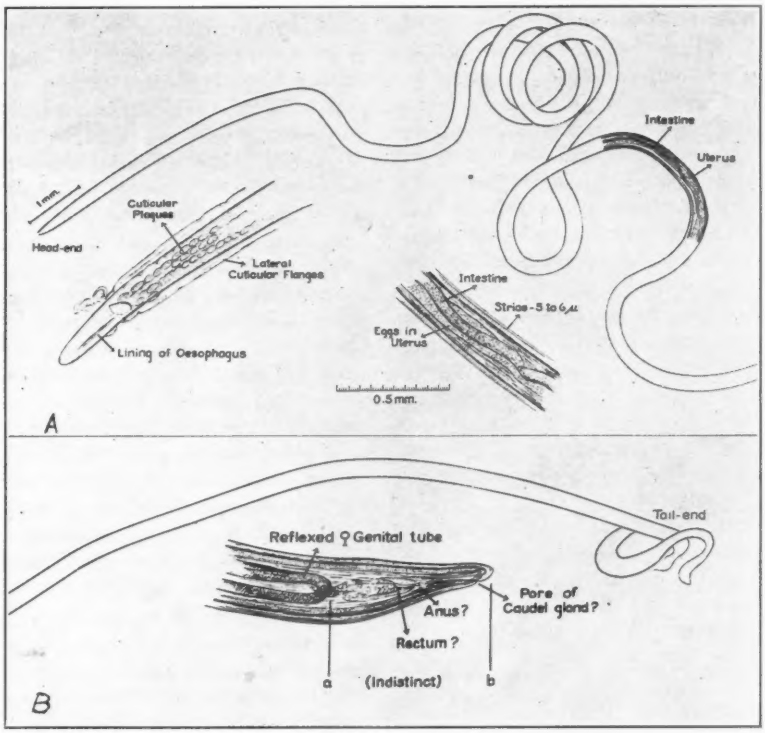
Professor Pane, of Rome, in 1864, found a gongylonema in the upper lip of a medical student.

Professor Alessendrini, of Naples, in 1914, found 6 gongylonemata in the mouth of an eighteen-year-old girl; these worms were extracted at different times, covering a period of six months.

Up to the case I am about to report, there have been three cases reported in the United States. Hall (1916) reported the first case. It occurred in the practice of Dr. R. E. Covington, of Arkansas, and was that of a girl sixteen years old, the worm being extracted from the lower lip.

Stiles (1917) reports the second case. It occurred in the practice of Dr. K. C. Clarke, of Florida, in a girl thirteen years old, the worm being extracted from the lower lip.

Stiles (1919) reports the third case. It occurred in the practice of Dr. Akridge, of of Georgia, in a fifty-year-old woman, the worm being extracted from the lower lip as in the previous cases.



Gongylonema hominis.
A shows head end of worm.
B shows tail end of worm.

Symptoms.—A wiggling feeling in the mouth, nervousness, and irritability. The patient may have digestive disturbances and anemia. Upon removal of the worm, symptoms cease.

Case Report.

On August 1, 1928, a single girl, aged 18 years, well developed, weight 160 pounds, height 5 feet 7 inches, and of a very cheerful disposition, came to my office and gave the history of having trouble with her mouth for about one month. She said she was not sick, but had a worm wriggling in the flesh of her lower lip and under her tongue.

On examination, I found hyperemic swollen patches on the mucous membrane on the lower

lip. She insisted that she could feel and sometimes see the worm move in different places in the lower lip, but I could see no worm. I gave her an alkaline mouth-wash and told her to return to me if she was not cured.

I heard nothing more from her until September 4, when she produced the worm, which was about an inch and a half long, and the size of a double naught ligature in diameter. It had been removed by her brother (a Methodist missionary) with a sterile needle. He made an incision parallel with the worm and removed it in toto from the mucous membrane of the lower lip one-half inch to the left of the mid-line. The patient was relieved of the peculiar sensation in the mouth and has remained well. The worm migrated about in the lower lip as far back as the fauces and in the floor of the mouth under the tongue.

This girl was born and raised in Virginia, and has never been out of the State. She has lived on the farm that she is now living on for the past five years. They have milk-cows on the farm, and some cock-roaches in the house.

I am greatly indebted to Dr. G. F. McGinnes, Department of Health, Richmond, Va., for his untiring efforts to identify this worm, and also to Professor C. W. Stiles, Hygienic Laboratory, U. S. P. H. S., Washington, D. C., for his identification and diagnosis of the worm.

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A STUDY OF URETERS IN FIFTY-ONE NECROPSIES.*

By SAMUEL H. NIXON, M. D., Christiansburg, Va.

The work of Hunner in establishing ureteral strictures as a distinct clinical entity has given a tremendous impetus to the interest and study of the ureter and its diseases. The divergent opinions expressed by different observers have stimulated discussion and original work on the subject. The ureter is being investigated from many viewpoints and new avenues of thought are being developed.

As part of the routine in performing necropsies, I began examination of the ureters for strictures, and later it seemed appropriate to include the study of the normal ureter, since preliminary to the scientific study of disease is an accurate knowledge of the physiological variations of structure and function of the organ. In this relation the physiological constrictions have a dual interest: Firstly, a predisposing cause of stricture through its obstruction to the passage of renal calculi, with its impaction, infection and resultant stricture formation; secondly, a precise knowledge of the variations in size, density and location of constrictions is necessary for an accurate differentiation from the true stricture. A confusion of the two conditions could explain in part the great discrepancy of authors on the subject of ureteral strictures. Schreiber reports a 12 per cent post-mortem incidence of ureteral strictures from one hundred unpicked consecutive autopsies. Some writers estimate the incidence as less than 1 per cent.

Peacock found from a study of sixty cases of impacted calculi of the ureter that 76 per cent of the stones were in the lower third, 19 per cent in the upper third and 5 per cent in the middle third. Of course, renal stones may become impacted in any part of the ureter, but the position of arrest varies directly with the size and density of the physiological constrictions. I hope to show below that the smallest constriction is at the uretero-vesical area, and the increased density is due to the ureter passing through the bladder wall. The next constriction in point of size and constancy of position is at the uretero-pelvic juncture. The constriction in the middle third of the ureter is the most variable in size and position.

Hunner and Peacock have shown that there is a definite association of ureteral strictures with impacted renal calculi. The latter states that, in 18 per cent of the cases of ureterolithotomy, marked organized strictures were found.

There is little uniformity of description of the ureter in the standard text-books on anatomy. While making the autopsy examinations discussed below, subjects with no discernible lesions of the urinary tract were selected for comparative anatomic study.

*Read before the Southwestern Virginia Medical Society, at Wytheville, September 28, 1928.

Gray's Anatomy describes the ureter proper as a cylindrical membranous tube, about sixteen inches in length and the diameter of a goose-quill, extending from the pelvis of the kidney to the bladder. Its course is obliquely downward and inward through the lumbar region, into the cavity of the pelvis, where it passes downward, forward and inward across that cavity to the base of the bladder, into which it then opens by a constricted orifice, having passed obliquely for nearly an inch between the muscular and mucous coats. The lower part of the abdominal portion exhibits a spindle-shaped dilatation.

Cunningham's Anatomy states that the ureter in situ has a total length of about ten inches. Its superior part lies in the abdominal cavity, and its inferior part lies in the pelvic cavity. The abdominal portion is about five or five and one-half inches in length, the pelvic portion is about four or four and one-half inches in length. The constrictions occur, (1) in the middle of the abdominal portion, (2) at the junction of the abdominal and pelvic portions, and (3) in the pelvic portion. Also, just before the ureter joins the pelvis of the kidney and where it reaches the bladder wall, its lumen is usually somewhat constricted.

These necropsies were made in the Section of Pathological Anatomy of the Mayo Clinic, and consist of fifty-one unselected cases. There were forty-seven adults—thirty-three males and fourteen females—the ages varying from twenty-six to eighty-two years; four children —three males and one female—ages five and one-half months, pre-natal, to eleven years.

The kidneys, ureters and bladder were inspected in situ for the relatonship of inflammatory masses and growths, then removed en masse, including the prostate in males. The prostate was examined for hypertrophy; the bladder for dilatation, thickening of walls, inflammation, diverticula and growths; the ureters for strictures, dilatations, kinking and local induration of the walls; and renal pelvis for dilatation. The ureters were then opened from the vesical orifice to the pelvis with probe-pointed scissors and the kidney divided longitudinally. The ureters were again inspected for inflammation, local induration, strictures and physological constrictions. The open ureters were laid on smooth boards with the mucosal surface upward, and the lengths were taken. Next the point at the pelvic brim was located as being 2 cm. above the mid-point of the ureter. With gentle pressure on the mucosal surface a scale was passed the entire length of the ureter, noting the points of constriction and areas of widening, care being taken to exert the same degree of pressure with the scale to insure uniform results. The reason is that the width of the ureters varies considerably according to the pressure made on the scale while taking the measurements. After the points of constriction were established, the width and distance from the kidney, brim of the pelvis and bladder were measured in centimeters. The widest areas were also measured, and notes and diagrams were made at the autopsy table.

An analysis of the findings will be given briefly. Six cases had a clinical diagnosis of disease of the urinary tract; thirteen cases showed gross lesions of the urinary tract at necropsy. In one case the right ureter was incorporated in a metastatic carcinoma, with apparently complete occlusion of the lumen, with dilatation of the proximal ureter and the kidney pelvis. There was partial reduplication of the right ureter in another case with marked dilatation of the double portion. No true inflammatory strictures were noted in the series.

Thirty-four adult subjects without gross lesions of the urinary tract were selected for comparative anatomic study.

The length of the left ureter varied from 26 to 38 cm., the average length being 32.1 cm. The length of the right ureter varied from 25 to 35 cm., the average length being 31.1 cm. Thus the left was an average of 1 cm. longer than the right.

The uretero-vesical constrictions showed little variation in size, the circumference varying from 0.3 to 0.5 cm., the average being 0.35 cm.

The uretero-pelvic constrictions varied in circumference from 0.4 to 1 cm., the average being 0.5 cm. The distance of the constrictions from the kidney varied from 3 to 11 cm., the average distance being 6.5 cm.

The constrictions at or near the pelvic brim varied from 0.4 to 0.9 cm., the average being 0.6 cm. Thirty-five per cent of the constrictions of the middle third were at the pelvic brim, and 65 per cent were anywhere from 4 cm. above the pelvic brim to 11 cm. below.

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A small percentage of the ureters had a fourth physiological constriction located in the pelvic portion.

The largest circumference varied from 0.7 to 2.5 cm., the average circumference of the largest part being 1.1 cm. The thickness of the walls was about 1 mm.

The left ureter in the four necropsies on children was slightly longer than the right. The constrictions at the uretero-vesical and uretero-pelvic junctures were very constant, but the constriction at the brim of the pelvis was even less definite than in adults.

Conclusions

The foregoing series of necropsies is inadequate to justify definite conclusions, and it is only through increased volume of this work that the incidence of ureteral strictures will be solved and the normal variations of the ureter evaluated. Probably it is permissible to state a few impressions formed in the course of this study:

(1). The study of the ureters in this series of fifty-one unselected necropsies does not tend to substantiate the high percentage of strictures reported from consecutive autopsies.

(2). A more minute knowledge of the normal variations of the ureter, and more accurate criteria for post-mortem diagnosis of strictures will promote the solution of incidence of ureteral strictures.

(3). The dimensions of the ureter are quite variable. The occurrence of uretero-vesical and uretero-pelvic constrictions is constant and definite. Constrictions of the middle third are very variable in size and position. Other physiological constrictions do not occur with any degree of regularity.

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Phlegar Building.

SOME THERAPEUTIC ACTIONS OF LIGHT.*

By C. P. OBENSCHAIN, M. D., Staunton, Va.

There is no effort in this paper to explain the scientific reasons for the behavior of light in its chemical and therapeutic actions. The facts here mentioned are taken from my own observation, and from treatises on artificial light in its relation to medicine.

It is characteristic of humanity to hunt for the elusive things of nature and neglect the obvious. The writer can think of nothing more in evidence than light, its power, and its effect on everything pertaining to our existence. We find our scientists developing cervical kyphosis from bending over the microscope, and gray-headed in their earnest search after medical knowledge. All honor is due them for the effort. But this knowledge is dispensed to us in books, page after page of which is used describing some ridiculous drug which we might need once or twice in a life time, while light, and other component parts of our surrounding medium, is neglected. It takes time, often centuries, for our empirical knowledge to be reduced to a scientific understanding. The effects of light on organic matter are not understood. However, this does not prevent our making use of these same effects where plainly indicated in our work.

We will review some of the actions of light on growing nature. No tree, plant, or living creature can live long without it and, conversely, nothing could live long if administered a continued glare of sunlight. Thus we find nature giving us our light in intervals of various lengths, and we human beings frantically trying to escape these beneficial doses by wearing clothes, building houses, remaining in the shade, riding in covered vehicles, and using every means possible to thwart nature in its attempt to help us.

Our tastes are perverted until we do not admire the muscular, sun-tanned, healthy, freckled young girl of outdoors, but we are asked to go in raptures over the shoe-string, weak, anemic substitute for a female, who compromises a little by trying to imitate the genuine effects of light by paints and other cosmetics.

In the matter of clothes, women have the advantage of more light reaching their bodies.

*Read before the Medical Association of the Valley of Virginia, at Harrisonburg, Va., May 31, 1928.

The average weight of a man's clothes is eight times as much as the clothes prescribed by fashion for women. It has been found by experiment that sensitized strips of paper pasted on the bodies of men show that scarcely any rays of light penetrate through the clothes, whereas the paper strips under the clothing of women are markedly affected by the light. The amount of light getting to our bodies depends very much on the kind of material from which the garments are made. Here, again, the woman has the advantage. Thus, except for the face and hands, practically no light ever reaches the bodies of men. This advantage is held by women from their youth up, as the legs of little girls are left almost bare, while little boys are often dressed in sailor garb with long pants or with knee pants and stockings joining.

When the writer first started to practice medicine in the country, it was often a wonder why the mountain families, in defiance of all the laws of hygiene, were sturdier, larger in stature, and had less sickness than the more fortunate (?) natives who had all the so-called comforts. At the time it was thought the pure air and simple food had the most to do with this discrepancy; but now, as I look back, the conclusion is reached that life in the open sunshine of the children, from babyhood up, with no social duties requiring the orthodox covering of their bodies, was the greatest factor.

In the animal kingdom, both domestic and wild, each individual takes his daily sun-bath, and spends much of his time where the beneficial rays of the sun can reach. Hence, we find his resistance to many diseases and injuries far superior to man, the most intelligent member of the kingdom. An an example of the intelligence or instinct, we find many animals going into winter-quarters when the sun's rays become weak and remain until there is a change. The ground-hog, for instance, comes out on the second day of February and, if he chances to get in the attenuated rays of the sun at this season, weak in the ultra-violet rays, he becomes disgusted and goes back to his hibernating quarters and pouts for six weeks longer.

The sun is unquestionably the best of all sources of light in places were sunlight can be used. Very few beneficial rays of sunlight ever get inside of our dwellings. Ordinary window glass filters out practically all of the chemical rays. Hence, the old style glass covered solarium for treating patients is a joke. In our own and other countries it has been found that the sunshine in high altitudes is the most active in the therapeutic rays. Colorado, New Mexico, Arizona and the other Rocky Mountain states are noted for their beneficial climate on the tubercular infected patient. The rarefied, dry, dustless atmosphere no doubt has a great deal to do with this good result, but, in the writer's opinion, the tubercular patient gets his most help from the sun's rays, which shine nearly every day in the year through a thinned, dry, dustless atmosphere, laden with much of the violet and ultra-violet rays. We are taught that golf, tennis, tent-life and any exercise in the open is good for the health because of the fresh air, skin activity, etc., all of which cannot be denied. But unconsciously, and generally unwillingly, the golf-player is getting his rays from the sun which he finds it impossible to get in his business quarters—perhaps several stories under masonry and wood. This light is the greatest factor conducive to his well-being.

Now we will turn to artificial sources of light. Here, again, we must imitate nature as much as we can, and get a light that will come as near sunlight as possible. We have, at present, two lights or instruments for making light available—the mercury-vapor light and the carbon light. Either of these can be used to advantage depending on the results desired. It is possible with these to know exactly what the patient is getting, and give our dose accordingly. Hence, we can give our patient in the low-lying district as much ultra-violet and violet light in a few minutes as he will get for the whole of the winter months from the sun, thus, raising his resistance to disease and his ability to do more and better work. We cannot in this short paper describe all the uses to which this artificial light can be put.

This treatment by light is not devoid of danger. When certain drugs are being used, care and understanding must be exercised and the idiosyncrasies of patients must be recognized. The writer has seen several tubercular children, tubercular by all the tests available, cured by using the mercury-vapor light, and up to the present, they have remained cured. Perhaps in rickets these artificial lights give

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the most brilliant results. The little weakened, soft-boned, undeveloped child will take increasing doses of this light, and in nearly every case be benefited. They seem to assimilate food better, their bones harden and the hemoglobin percentage rises rapidly.

The writer can think of but few diseases that will not be benefited by this mode of treatment. Due to the thickness of the walls of the adult, the short ultra-violet rays are not as effective as in children and we must resort to the blue and violet, and the long wave ultra-violet rays when treating a tubercular chest.

However, this paper does not admit of any description of the technique of administering the artificial lights. The therapeutic effect in cases where indicated is always beneficial, not from anything added to the body by the light, but from its sterilizing properties and its stimulating of all of the fluids and tissues. It is not necessary to know the exact mode of this action when there is abundant proof that the results can be depended upon. In my opinion, we have in light, while not a panacea, a remedy second to none.

Selma Boulevard.

APPARATUS FOR THE RUBIN METHOD OF INSUFFLATION OF FALLOPIAN TUBES IN STERILITY.

Apparatus Arranged And Cabinet Designed

By JOSEPH BEAR, M. D., Richmond, Va.

Associate in Obstetrics, Medical College of Virginia; Lecturer on Obstetrics, Retreat Hospital Training School.

The apparatus herein described is the one fashioned and recommended by Dr. I. C. Rubin, of New York. The writer has added a few minor details in the arrangement and has designed a cabinet suitable to be kept in the office and offers a maximum protection to the delicate glass work, etc. The mechanical principles involved and the suggested technique by Rubin are closely followed.

Some of the salient features in using this apparatus are as follows: a uniform pressure-rate flow of gas—this is regulated by the reduction valve attached to tank. It is so graduated as to give forth a constant and even flow of gas. This valve is regulated to ten pounds of pressure. It is important to try out the rate of flow before the actual test is made; e. g., fifteen seconds is required to raise the mercury column to 100 Mm. of Hg. for when this occurs there is a certain degree of uniformity for the passage of gas into the tubes. If this is not done one is apt to cause a sudden, forceful, irregular and uncertain insufflation of gas and may produce traumatic and harmful results. The writer uses an automobile watch herein described for timing purposes. Slow and careful introduction of the gas is the keynote of its performance.

The above apparatus is more efficient than the bulb or syringe devices recently modified, for, no hand-pressure can be as even and steady as a finely adjusted mechanical valve. Furthermore, the introduction of air instead of carbon dioxide gas increases the chances for air embolism.

The only use for the Rubin test is in the case of sterility. It is a diagnostic procedure proving the tubes to be either patent or occluded. In a certain percentage of cases, especially where there is partial occlusion, with repeated tests, it may serve as a therapeutic measure.

The test is not applicable to all patients: each case must be properly selected in order to obtain satisfactory results. There must be no bleeding present, no elevated temperature, no pelvic tenderness, no sub-acute tubal inflammation, no tumors or purulent discharge. The patient must be free from serious cardiac or respiratory disease. It can readily be seen that if the test is employed in the presence of infection in the generative tract an acute exacerbation of an old chronic affair will be brought to the surface—the test will prove fruitless and new pathology produced. Even when the cannula is first introduced and bleeding occurs, no further attempt should be made with the test, for it is an index to an inflammatory process in the cervix or endometrium.

Perhaps the most suitable time for the performance of the test is about seven days after cessation of a regular menstruation. The endometrium is then in a quiescent state and one is less apt to meet with cases of early pregnancy if the above stated post-menstrual interval is observed. Coitus should not be permitted before test is made.

In normal (open) tubes no more than 20 to 30 Mm. Hg. is required to keep up the flow of gas. As a safe rule to follow it is best not

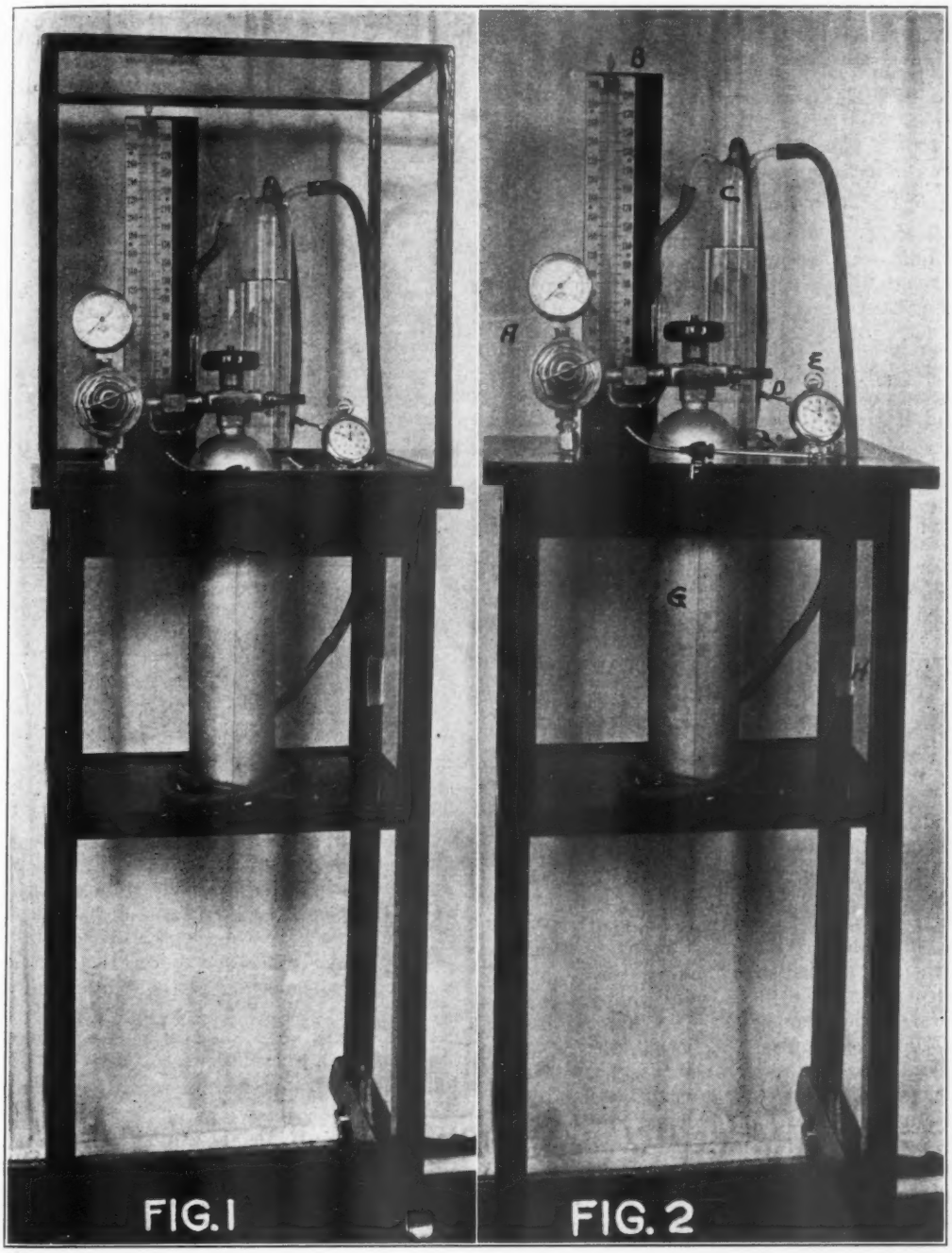

FIG. 1 FIG. 2

A—Reduction valve; B—Mercury column; C—Siphon with distilled water; D—Clamp for regulating gas flow; E—Automobile watch attached to table; F—Cannula; G—Gas tank (with Carbon Dioxide) invisibly attached; can be removed through opening on table; H—Sliding glass with finger notch. The lower portion of Cabinet is glass encased. In Fig. 2 the glass top has been removed. Felt rollers are used on cabinet permitting same to be easily removed.

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to exceed a pressure of 200 Mm. Hg. in any given case.

The test is a comparatively safe office procedure and no anesthetic is required. Personally, I employ head mirror with reflection obtained from electric globe installed above examining table thus insuring a better vision on the exposed field.

A drop in intrauterine pressure during an examination means that gas has passed through one or both tubes. A pressure of 200 Mm. on repeated trials indicates the closure of both tubes.

As soon as test is completed, patient is placed in knee-chest posture from five to ten minutes and if patency is demonstrated the gas will rise much faster towards diaphragm. As soon as the upright position is assumed, pain may be present in one or both shoulders. This symptom is present in over 90 per cent of the cases in which gas has passed into the abdomen and is very positive evidence that the tubes are patent.

301 *East Franklin Street.*

FOREIGN BODY IN THE ESOPHAGUS: CASE REPORT.

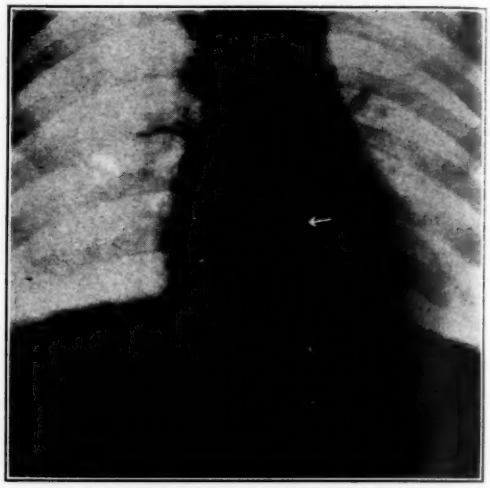
By ELBYRNE G. GILL, M. D., Roanoke, Va.

Patient, M. B., age four years, was admitted to the hospital June 21, 1928. The patient was referred by Drs. Shepperd, Nicholson and Short, of Jenkins, Ky. The following history was given by the parents: On June 20th (twenty-four hours prior to admission), the child swallowed a large penny and vomited soon afterwards. She had not had anything to eat or drink during past twenty-four hours. Previous attempts to remove the coin had been made prior to the admission to the hospital. The temperature on admission was 103.2 degrees, pulse 140, respiration 32. Urinalysis showed acetone and diacetic.

Fluids were given by mouth also bismuth sub-nitrate grs. 5, and calomel grs. 1/3, were given every four hours until seven doses had been administered. This was to relieve the esophagitis which was rather marked. Glucose 5 per cent solution was given in 100 c.c. doses per rectum every four hours until four doses had been administered. The temperature gradually subsided during the first forty-eight hours after admission. The acetone and diacetic acid also disappeared.

The physical examination was negative.

The X-ray examination revealed a large coin in the esophagus near the cardiac orifice and opposite the eighth interspace anteriorly.



Shows coin in esophagus.

Photograph of coin removed.

The third day after admission the child's temperature was normal and urine was negative. The condition now being favorable, the child was prepared for operation. Esophagoscopy under ether anesthesia, the coin was seen partially embedded in the swollen mucosa of the esophagus about two inches above the cardiac orifice. The coin was removed and the child made an uneventful recovery. It was an old English penny and measured 2½ cm. in diameter.

COMMENT.—While the foreign body was in the esophagus, when the patient was admitted, ample time was given to prepare the patient properly for the operation. Had esophagoscopy been attempted immediately after admission, the termination would probably have been fatal.

Gill Memorial Eye, Ear and Throat Hospital, Department of Bronchscopy.

Medical News of the Past

FORTY-FIVE YEARS AGO.

At the fifteenth annual session of the Medical Society of Virginia, at Rawley Springs, Va., September 9-12, 1884, the following were elected members of the first State Board of Medical Examiners in Virginia—two from the State at large and three from each Congressional District:

Examiners from the State at large—Drs. Wm. C. Dabney, Charlottesville, and F. D. Cunningham, Richmond.

First District—Drs. S. W. Carmichael, Fredericksburg; O. B. Finney, Onancock; W. W. Douglas, Middlesex County.

Second District—Drs. Thomas B. Ward, Norfolk; L. L. Lankford, Bowers; Jesse H. Peek, Hampton.

Third District—Drs. R. A. Lewis, Richmond; Charles R. Cullen, Richmond; O. A. Crenshaw, Richmond.

Fourth District—Drs. William J. Harris, Nottoway; Hugh Stockdell, Petersburg; J. Herbert Claiborne, Petersburg.

Fifth District—Drs. W. L. Robinson, Danville; T. B. Greear, Rocky Mount; Rawley W. Martin, Chatham.

Sixth District—Drs. Harvey Black, Blacksburg; H. Gray Latham, Lynchburg; Oscar Wiley, Salem.

Seventh District—Drs. William P. McGuire, Winchester; J. H. Neff, Harrisonburg; Hugh T. Nelson, Charlottesville.

Eighth District—Drs. C. C. Conway, Rapid Ann Station; Bedford Brown, Alexandria; Alex. Harris, Jeffersonton.

Ninth District—Drs. S. W. Dickinson, Marion; Robert J. Preston, Abingdon; R. D. Huffard, Chatham Hill.

Tenth District—Drs. Henry M. Pattison, Monterey; Z. C. Walker, Gish's Mill; G. D. Meriwether, Pedlar Mills.

The names of the above thirty-two men were presented the Governor of the State for his approval. The term of office then as now was for four years, or until their successors were appointed and qualified. The first board entered upon its duties on the first day of January, 1885. Dr. William C. Dabney was the first president of the Board and Dr. Hugh T. Nelson the first secretary.

Proceedings of Societies

Medical Examining Board of Virginia.

At the meeting of the Board in Richmond, December 4-7, 1928, twenty-five applicants representing seventeen institutions were granted certificates to practice medicine in Virginia, as follows:

Dr. Marion B. Bailey, Warrenton, Va.
Dr. Richmond J. Beck, Richmond, Va.
Dr. William Hoge Carr, Bluefield, W. Va.
Dr. Edward I. Davies, Hopewell, Va.
Dr. Mahlon Wingate DeLoatch, Norfolk, Va.
Dr. Charles Holmes Epting, Stonega, Va.
Dr. Harold Edgar Hansen, Roanoke, Va.
Dr. Millard Daniel Hill, Richmond, Va.
Dr. Claude Velmont Hollowell, Norfolk, Va.
Dr. Philip Jacobson, Petersburg, Va.
Dr. Wiliam Henry Lawson, Jr., Atlanta, Ga.
Dr. Edwin Partridge Lehman, University, Va.
Dr. Robert Emmet Moran, Washington, D. C.
Dr. Edward Washington Murray, Chicago, Ill.
Dr. John Robert Owens, Pittsburgh, Pa.
Dr. Harold Walter Potter, Newport News, Va.
Dr. Lewis Charles Pusch, Richmond, Va.
Dr. George Dudley Riggs, Bristol, Tenn.
Dr. Herman David Scarney, Roanoke, Va.
Dr. Fletcher Bell Sharp, Toronto, Ont.
Dr. Francis Bailey Teague, Roanoke, Va.
Dr. Sydney F. Tichborne, Toronto, Ont.
Dr. Marcellus E. Toney, Baltimore, Md.
Dr. John Joyner Tyson, Norfolk, Va.
Dr. Harry Pemberton Williams, Danville, Va.

Alexandria (Va.) Medical Society.

At the March meeting of this Society, Dr. Robert E. Moran, a surgeon who has recently opened offices in that city, was admitted to membership.

In view of the success and accomplishments of the Virginia Tuberculosis Society in their recent campaign and clinics held in Alexandria, the Society appointed Dr. H. A. Latane and Dr. Llewellyn Powell as clinicians to conduct monthly clinics at the local Health Department.

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The Warwick County Medical Society,

At its annual meeting, elected Dr. M. B. Beecroft president; Dr. Samual Downing vice-president, and Dr. B. L. Carleton secretary-treasurer. All officers are of Newport News.

At the meeting on February the 11th, Dr. H. W. Potter, of Newport News, was elected a member.

We are advised by the secretary that this is a very active society, meeting twice a month. At each meeting, papers and addresses are delivered by local and out of town doctors.

The Wise County Medical Society,

At its annual meeting, held in Norton, on February the 27th, elected the following officers for the ensuing year: President, Dr. W. B. Peters, Appalachia; vice-presidents, Drs. S. P. Gardner, Derby; T. S. Ussery, Norton, and F. S. Givens, Wise. Dr. W. R. Culbertson, Norton, was re-elected secretary-treasurer.

The Northampton County Medical Society

Held its regular quarterly meeting at the Northampton-Accomac Hospital at Nassawadox, Va., March the 13th, at which time five new members were admitted. Short addresses were made by Drs. H. L. Denoon, Jr., and John L. Hamilton, of the Hospital Staff, following which a delightful course dinner was served at the hospital. Dr. Sheppard K. Ames, Cape Charles, is president, and Dr. J. Mortimer Lynch, Cape Charles, secretary.

The Southwestern Virginia Medical Society

Held its regular semi-annual meeting in Pulaski, March 25th and 26th, under the presidency of Dr. A. M. Showalter, of Christiansburg. Dr. E. G. Gill, of Roanoke, is secretary. Four doctors were admitted to membership. The next meeting will be held at Galax, Va., the latter part of September, at which time will also be held the election of officers.

University of Virginia Medical Society.

At the meeting on January 7th, the new president, Dr. Carl Speidel, presided.

Dr. Dudley Smith presented a patient with Xeroderma Pigmentosa who had been shown to the society in November. Under radium treatment the large tumor of the nose had entirely disappeared, and rest and proper food had caused a marked general improvement.

A case of toxic psychosis was described by Dr. P. P. T. Wu. No etiologic agent had been discovered and the patient was presented as a diagnostic problem.

Dr. Robert B. Bean demonstrated a very elaborate model of the peritoneum which had been prepared under his direction.

"A Human Monster of the Fourth Week", was the subject of a paper read by Dr. H. E. Jordan. This is to appear in the Journal at a later date.

The main paper of the evening was read by Dr. C. Bruce Morton. The title was, "Observations on Peptic Ulcer; Clinical Experiments with Gastro-duodenal Analysis." Discussion was led by Dr. Edwin P. Lehman.

At the meeting of January 21st, the principal paper of the evening was, "Tularemia in Virginia", read by Dr. Staige Davis Blackford. This paper, which is to appear in the Journal, was augmented by the report of a case clinically diagnosed as Tularemia but which at autopsy showed nothing characteristic of the disease. The blood of the patient had been repeatedly positive for agglutination with B. Tularensis. Dr. Graham reported the autopsy findings in this case in which gangrene of the lung was the outstanding feature.

Dr. R. A. Gandy reported a case of non-tuberculous spontaneous pneumothorax and briefly reviewed the outstanding points in the etiology of the condition and also took up the classification of spontaneous pneumothorax in general. Discussion of this case was led by Dr. H. B. Mulholland.

An interesting case of "Massive Collapse of the Lung" successfully treated by posture and enforced coughing was reported by Dr. Edwin P. Lehman. The condition appeared two days after a simple appendectomy and the diagnosis was corroborated by X-ray films and the return of the lung to normal was graphically shown. This case and the subject of Massive Collapse was discussed by Drs. Wood, Flippin, Woodward and Lehman.

Dr. Brumfield demonstrated a number of pathological specimens which had been mounted according to the most modern technique. The use of black or dark green as a background was most effective.

Woman's Auxiliary, to the Medical Society of Va.

Publicity Desired.

We believe it would be a stimulus to better work to have regular reports from the various local auxiliaries, telling of their meetings and of the work being done. In view of this, letters were recently sent presidents of the various auxiliaries in the State, requesting them to appoint Publicity Chairmen who would regularly send reports to this journal for publication. This may create an interest in some inactive auxiliary.

Again, we wish to urge that the Auxiliaries send regular reports for publication.

The Truth About Medicine

In addition to the articles enumerated in our letter of January 26th, the following have been accepted:

E. Bilhuber, Inc.
Lenigallol.
Ciba Co., Inc.
Dial-Ciba
Tablets Dial-Ciba, 0.1 Gm. (1½ grains)
Elixir Dial-Ciba.

NEW AND NON-OFFICIAL REMEDIES.

Tablets Ephedrine Hydrochloride—Squibb, ¾ grain.—Each tablet contains ephedrine hydrochloride—Squibb (*The Journal*, September 1, 1928, p. 645), ¾ grain. E. R. Squibb & Sons, New York.

MacDowell's Wheat-Nut-Casein Dietetic Flour.—A flour prepared from wheat, edible nuts and casein, to which has been added a leavening mixture composed of potassium bitartrate and sodium bicarbonate and sodium chloride as flavoring. The product has approximately the following composition: protein, 28.67; carbohydrate, 28.68; fat, 18.69; ash, 5.64; fiber and pentosans, 7.59; and water, 8.49. MacDowell's wheat-nut-casein dietetic flour is proposed for use in the dietetic treatment of diabetes and wherever restriction of carbohydrate in the diet is desired. MacDowell Brothers, Ogdensburg, N. Y.

Pirquet Test for Tuberculosis (Bovine Type).—Tuberculin—Koch (New and Non-official Remedies, 1928, p. 363), marketed in capillary tubes, put up in packages, respectively, of one tube, two tubes and ten tubes, accompanied by controls. H. K. Mulford Co., Philadelphia.

Tuberculin Ointment (Moro Ointment) (Bovine Type).—An ointment containing tuberculin—Koch (New and Non-official Remedies, 1928, p. 368), 50 per cent, with an equal part of hydrous wool fat. H. K. Mulford Co., Philadelphia.

Tuberculin Intracutaneous (Bovine Type).—Marketed in single packages of one intradermal syringe containing tuberculin—Koch (New and Non-official Remedies, 1928, p. 368), 0.2 mg. in physiological solution of sodium chloride, 0.05 c.c.; in packages of five intradermal syringes each containing tuberculin—Koch (New and Non-official Remedies, 1928, p. 368) 0.2 mg. in physiological solution of sodium chloride; and in single vial packages containing tuberculin—Koch (New and Non-official Remedies, 1928, p 368) 0.012 Gm. in physiological solution of sodium chloride, 3 c.c. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., January 19, 1929, p. 231).

Concentrated Liver Extract—Armour.—A solution of a water-soluble fraction extracted from fresh mammalian liver. One hundred c.c. represents fresh liver, 767 Gm (1 fluid ounce represents 8 ounces avoirdupois). Concentrated liver extract—Armour, is used in the treatment of pernicious anemia. Its value in other types of anemia has not been established. Concentrated liver extract—Armour, is administered orally. (Armour & Co., Chicago).

Ampules Dextrose, U. S. P., 10 Gm., 20 c.c.—Each ampule contains dextrose, U. S. P. (New and Non-official Remedies, 1928, p. 244), 25 Gm., in distilled water, 20 c.c.; buffered with sodium glycerophosphate, 0.03 per cent. Abbott Laboratories, North Chicago.

Ampules Dextrose, U. S. P., 25 Gm., 50 c.c.—Each ampule contains dextrose, U. S. P. (New and Non-official Remedies, 1928, p. 244) 25 Gm, in distilled water, 50 c.c.; buffered with sodium glycerophosphate, 0.03 per cent. Abbott Laboratories, North Chicago.

Pollen Allergen Solutions—Squibb.—In addition to the products listed in New and Non-official Remedies, 1928, p. 31, the following products marketed in 5 c.c. vials, have also been accepted: Dandelion Pollen Allergen Solution—Squibb; English Plantain Pollen Allergen Solution—Squibb; Goldenrod Pollen Allergen Solution—Squibb; Perennial Rye Grass Pollen Allergen Solution—Squibb; Ragweed (Dwarf) Pollen Allergen Solution—Squibb; Ragweed (Giant) Pollen Allergen Solution—Squibb; Red Top Pollen Allergen Solut'on—Squibb; Russian Thistle Pollen Allergen Solution—Squibb; Sunflower Pollen Allergen Solution—Squibb. E. R. Squibb & Sons, New York.

Pollen Allergen Solutions—Squibb.—5 c.c. vial packages of the following products have also been accepted: Bermuda Grass Pollen Allergen Solution—Squibb; June Grass Pollen Allergen Solution—Squibb; Mugwort Pollen Allergen Solution—Squibb; Orchard Grass Pollen Allergen Solution—Squibb; Sagebrush Pollen Allergen Solution—Squibb; Western Ragweed Pollen Allergen Solution—Squibb. E. R. Squibb & Sons, New York.

Tablets Cinchophen—Abbott, 5 grains.—Each tablet contains cinchophen (New and Non-official Remedies, 1928, p. 123), 5 grains. Abbott Laboratories, North Chicago.

Sulpharsphenamine—Squibb, 0.9 Gm. Ampules.—Each ampule contains sulpharsphenamine—Squibb (New and Non-official Remedies, 1928, p. 84), 0.9 Gm. E. R. Squibb & Sons, New York. (Jour. A. M. A., January 26, 1929, p. 313).

PROPAGANDA FOR REFORM

Lending Aid and Comfort to Quackery.—The federal officials whose business it is to prosecute the exploiters of medical fakes and frauds have for years complained that the government is much hampered in its legal assaults on quackery by the fact that physicians of standing will sell their expert testimony to the nostrum exploiters. Regardless of the nature of the evidence or opinion, the appearance of a reputable physician on the side of the quack may lead a jury to believe that the nostrums under consideration are worth while and that the claims made for them are true. Recently hearings have been held before the Federal Trade

Commission in the matter of a quack "obesity cure" known as "Marmola". It is sold by one Edward D. Hayes, who at the present time does business under the trade name "Raladam Co." He has repeatedly been prosecuted for the exploitation of quack nostrums. Marmola, according to the exploiters, has essentially the following composition: Desiccated thyroid ½ grain, extract of bladderwrack (fucus vesiculosus) 1 grain, extract of phytolacca ½ grain, extract of cascara sagrada ¼ grain, phenolphthalein ¼ grain. For the government Dr. Charles A. Elliott, Solomon Strouse and Rollin T. Woodyatt testified as to the effects of the indiscriminate use of thyroid substance by the public. Not one of these three men charged the government a cent—they donated both their time and special knowledge. At a subsequent hearing Edward D. Hayes had expert witnesses to testify that Marmola was a scientific (!) preparation and that it was harmless when used according to direction. The men that testified to this effect were: Robert W. Keeton, Alonzo C. Tenney, Frank L. Stone, George W. Funck, Harold S. Hulbert, Samuel F. Haverstock. Each of these men is a member of his local medical society and, through that, has qualified as a Fellow of the American Medical Association. Here, then, is a sweet spectacle: the American Medical Association attempting to protect the public against quack remedies, while individual members lend aid and comfort to the exploiters of quack remedies. (Jour. A. M. A., November 3, 1928, p. 1377).

Treatment of Typhoid by So-called Detoxicated Vaccine.—The formaldehyde detoxification principle elaborated by Ramon has been applied to typhoid vaccine. The method consists in incubating cultures of the typhoid bacillus with formaldehyde in such a manner that the toxic principle is destroyed while the antigenic properties remain, and is similar in principle to diphtheria toxoid (which has been admitted to New and Nonofficial Remedies). The number of cases on which this vaccine was tried does not permit the drawing of conclusions as to its value. (Jour. A. M. A., November 3, 1928, p. 1378).

Pertussis Bacillus Vaccine.—Vaccine made from stock cultures has been used with a great variety of success. Certainly as used it does not prevent all cases, nor does it cure a great percentage of those who have contracted the disease. Its use is not harmful so far as we know and the reactions are slight, if any. For this reason it may seem desirable at times to use them even though results may not be encouraging. (Jour. A. M. A., November 3, 1928, p. 1394).

Deaths from Contaminated Toxin-Antitoxin.—At Bundaburg, Australia, last January, twelve of twenty-one children inoculated with diphtheria toxin-antitoxin at one time died within the next few days. An extensive investigation was made into the causes of the fatalities. The mixture used was issued in rubber-capped bottles, but without the addition of an antiseptic, in order to avoid possible risk from freezing. Each bottle was to be used at one time, but this was not done at first, and fluid was withdrawn from one bottle several times in the course of a week. The investigation brought out that the symptoms and the post mortem and bacteriologic observations were all suggestive of an overwhelming infection with staphylococci. Evidently the vial was contaminated during the previous injections, and in the absence of an antiseptic the organisms multiplied in the fluid. (Jour. A. M. A., November 17, 1928, p. 1553).

Book Announcements

The Technic of Local Anesthesia. By ARTHUR E. HERTZLER, M. D., Ph. D., LL. D., F. A. C. S., Professor of Surgery in University of Kansas, etc. FOURTH EDITION. St. Louis. The C. V. Mosby Company. 1928. Octavo of 284 pages, with 146 illustrations. Cloth. Price $6.00.

The Climacteric (The Critical Age). By GREGORIO MARANON, Professor of Medical Pathology in the Madrid General Hospital; Member of the Royal National Academy of Medicine. Translated by K. S. STEVENS. Edited by CAREY CULBERTSON, M. D., F. A. C. S., Associate Clinical Professor of Obstetrics and Gynecology, Rush Medical College of the University of Chicago, etc. St. Louis. The C. V. Mosby Company. 1929. Octavo of 425 pages. Cloth. Price, $6.50.

Injection Treatment of Internal Hemorrhoids. By MARION C. PRUITT, M. D., L. R. C. P., S. (Ed.) F. R. C. S., (Ed.) F. A. C. S., Associate in Surgery, Medical Department, Emory University, Georgia; Proctologist, Davis-Fischer Sanitarium; Formerly, Resident Surgeon, Westminster Hospital, London, England, etc. St. Louis. The C. V. Mosby Company. 1929. 137 pages. Illustrated. Cloth. Price $3.00.

Endochine Diagnostic Charts. With Other Related Information Compiled by HENRY R. HARROWER, M. D. 1929. The Harrower Laboratory, Inc., Glendale, Calif. 144 pages. Leather. Price $1.00.

The Injection Treatment of Hemorrhoids. By DR. CHARLES CONRAD MILLER. Modern Surgery Publications. Chicago. 1929. 12 mo. of 124 pages. Illustrated. Cloth.

International Clinics. A Quarterly of illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine, Surgery and the Specialties. By LEADING MEMBERS OF THE MEDICAL PROFESSION THROUGHOUT THE WORLD. Edited by HENRY W. CATTELL, M. D., Philadelphia, with Collaborators. Volume I. Thirty-ninth Series, 1929. Philadelphia and London. J. B. Lippincott Company. 1929. Octavo of 303 pages. Cloth.

Birth, Stillbirth, and Infant Mortality Statistics for the Birth Registration Area of the United States. 1926. PART I., SUMMARY AND RATE TABLES AND GENERAL TABLES. Quarto of 253 pages. Paper. Sold only by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. Price 60 cents.

Adventuring for Health. A Series of Expeditions in Behalf of the Metropolitan Life Insurance Company's Industrial Policyholders. WELFARE DIVISION, Metropolitan Life Insurance Company. Home Office—New York. This booklet tells in pictures, in words, and in statistics the story of the twenty years since this Company began its program of health education of policyholders.

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Editorial

Comments on Cholesterol and its Significance.

A substance forming a large part of gallstones and associated in the pathology of the bile tract must ever engage the interest of the reading medical man. If no other significance could be assigned to its presence, this one should be quite enough to make inquiry into new investigations and considerations of this material. Much wider significance, of course, as recent physiologic studies show, must be given to this important ingredient of gallstones because it is here found only in one of its pathologic forms, while it occupies prominent and essential positions in the various structures of the body. This substance is found, as physiologists tell us, in animal fats and oils, in the bile, the blood, the brain tissue, the medullated sheaths of nerve fibers, the liver, and the suprarenal bodies. This substance is likewise widely distributed as phytocholesterin in plants which comprise so much of the food forms of animals.

While active discussion has occurred over this substance and its significance and while much remains to be learned of its nature, it is known to occupy an important place in tissue life of the brain and nervous system, and other structures. It is known to be a non-nitrogenous substance which seeks elimination from the body through the bile, the intestinal mucosa, and the skin, and is an ingredient of milk. A recent resume of a paper by Dr. E. Noble Chamberlain* draws attention especially to the skin as a site of excretion of the substance.

*The British Medical Journal, March 2, 1929, Page 400.

It is believed that cholesterol, which, as before stated, forms so important a part in the brain and nerve and blood cell construction, is derived from the food in large measure, and, also manufactured or synthetically formed, in certain times of need, supplementarily, by the suprarenal glands. This latter view is as yet a subject of question, but the author supports the point.

The uses of cholesterol are rather well established in that it is required for the daily replacement of the breakdown of cellular tissues constantly going on in the body where it forms a part. The quota required for this is furnished through the medium of the blood in form of blood cholesterol. In any individual, Chamberlain observes, the blood cholesterol is constant, due to the balance between intake by food and excretion and between synthesis and destruction. Besides the suprarenal, it is suggested that the spleen takes part in the regulation of blood cholesterol balances.

Our readers interested, as they must be, in all questions touching upon the construction and maintenance of integrity and growth of the central nervous system and structure of blood cells, may note that this fat-related substance is derived from animal and plant foods, and synthetically produced in the body under certain conditions, that it is probable that cholesterol possesses notable antihemolytic properties, that it may play an important role in processes of blood coagulation and sedimentation of red cells, that the relation of immunity in tissues and blood is closely tied up with a rise of blood cholesterol, and may have an important and direct part in immunity against infection. So fat metabolism, and blood and brain structures and functions are apparently suggestively associated in a close correlation of no mean significance.

Finally, in the matter of its uses, the author directs attention to recent work of irradiation of ergosterol in the production of that important vitamin D: in that, plant life and animal fats may jointly be the source of it in the body. But it is in the relation of cholesterol to the sick body that practitioners will find its appeal as a working point. So we may point out briefly suggestive relations of cholesterol to certain important pathologic problems.

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Hypercholesterinemia

An excess of blood cholesterol is noted in certain forms of nephritis: marked rises in blood cholesterol in the type of nephritis and seems to bear a proportional relation to the degree of oedema and, too, in cases where the oedema disappeared and the hypercholesterinemia remained, the prognosis was found to be more unfavorable. In cases of acute Bright's disease, likewise, similar increase of blood cholesterol was observed but in the interstitial type of nephritis, there was no excess of blood cholesterol unless arteriosclerosis was a dominating feature. Chamberlain observed that in arteriosclerosis alone hypercholesterinemia was associated. Some experiments in the production of atheroma in rabbits by cholesterol feeding have been unavailing in explaining this association in man.

Diabetes offers another group of cases with high blood cholesterol and the question of fat feeding and lipemia and acidosis are interrelated and as yet not understood. In diseases of the liver hypercholesterinemia was noted and particularly found in liver disease and obstructive jaundice which may reasonably result from retention alone. In hemolytic jaundice, it was found, however, that hypocholesterinemia existed, and this fact may serve as the means of diagnostic value here. Formation of gall-stones from cholesterol in the bacterially infected tract or in an over-cholesterol loaded bile are deposited in the gall-bladder. The nature of this derangement of cholesterol in the production of gall-stones is yet, however, unsettled.

Hypocholesterinemia

Low blood cholesterol cases were associated in the review with most forms of anemia. Anemia of malignant disease was attended by low blood cholesterol. In cancer it was observed that "plasma cholesterol was greater than that for whole blood". This was found to be the reverse of conditions in the normal body and in other diseases than cancer. Further, in bacterial infectious processes in the body of any marked degree, hypocholesterinemia existed and seemed to possess proportionate values to the degree or intensity of the infection. Finally, attention was drawn by the writer to the deposition of cholesterol in various places in the body, such as the arterial walls, in the retina and vitreous and in xanthomatosis.

News Notes

Plans Developing for Charlottesville Meeting.

Plans have been made to open the new medical buildings at the University of Virginia at the time of the State Society meeting, prominent speakers having been invited for this occasion. Following the morning exercises, there will be a luncheon for all the visitors. This will add greatly to the interest of our meeting in Charlottesville, October 22nd, 23rd and 24th.

The Albemarle County Medical Society has appointed the following committee in charge of the meeting of the Medical Society of Virginia:

Dr. Lawrence T. Royster, General Chairman.
Dr. W. E. Brown, Finance.
Dr. T. H. Daniel, Entertainment.
Dr. W. D. Macon, Hotels and Meeting Halls.
Dr. M. L. Rea, Reception, Automobiles and Golf.
Dr. D. C. Smith, Exhibits—Scientific and Commercial.
Dr. A. F. Voshell, Badges and Publicity.

The following committee has been appointed by the University of Virginia Department of Medicine to cooperate to the fullest with the above committee:

Dr. Wm. H. Goodwin, chairman
Dr. V. W. Archer
Dr. W. E. Bray
Dr. J. C. Flippin
Dr. H. E. Jordan
Dr. J. M. Kindred

These committees are making attractive plans for this meeting.

Registry of Technicians.

In accordance with the trend of the times, the practice of medicine is utilizing more and more the services of trained lay help. The advent of the laboratory as an indispensable aid to the diagnosis of disease has created a new specialty in medicine; that of clinical pathology. In order to carry on the numer-

ous technical tests required in scientific diagnostic procedures, the laboratory director has found it necessary to train the technical personnel. With the standardization of hospitals and the urgent call for qualified laboratory assistants there has arisen a demand for proper standardization of the preliminary education and technical training of those enrolled in this new profession.

There has also been a desire on the part of those engaged in this useful calling to raise their status, similar to the evolution of the trained nurse of a generation ago. This want is now being taken care of by a national organization consisting of a body of men who are most vitally interested in elevating the intellectual and technical status of laboratory workers. The American Society of Clinical Pathologists has taken upon itself the task of organizing a Registry of Technicians with rules under which those qualified by education, technical instruction, and moral character will receive a certificate.

The subject is of interest to physicians in every field of endeavor as many of them are desirous of securing the services of technicians to carry on the routine laboratory procedures.

There is no doubt that the elevation of the laboratory technician to the status of a respected and useful calling will be a great help to the medical profession, to the patient, and to the scientific practice of medicine.

The headquarters of the Registry of Technicians of the American Society of Clinical Pathologists are located in the Metropolitan Building of Denver, Colo.

Another very desirable feature of the Registry is the facilities it offers in finding suitable placement for registrants and in aiding physicians to find desirable applicants.

Technicians in this section desiring information and application blanks may write Dr. Regena C. Beck, Stuart Circle Hospital, Richmond, Va.

Improved Sanitation is Banishing Typhoid.

The State Health Department expresses great satisfaction over the typhoid record for 1928. It was stated today at the office of the health commissioner that when 1924 showed a death total of 209 from typhoid fever, it was thought that it would be many years before this figure would be materially lowered. However, 1928 proved the banner year. There were only 154 typhoid deaths that year, a rate of about 6 to the 100,000 of inhabitants.

Better sanitation is the solution of the problem. Year by year interest in this phase of health work has been growing; and now the interest is greater than it has ever been. Dr. Ennion G. Williams, state health commissioner, is endeavoring in every way to accelerate that interest. The record of the big cities, not only in Virginia but throughout the country, has shown what can be accomplished by perfect sanitation. Although it is a more difficult task to sanitate rural sections than cities, the health department is now striving to secure a 100 per cent sanitated State. Now is the time to start new work and repair old places. The fly season will be here soon—and flies are the chief carriers of filth germs.

The Annual Report of St. Elizabeth's Hospital,

Richmond, Va., for 1928, shows that during that year there were thirteen publications by members of the staff of the hospital, in seven different medical and surgical journals. There was one book published, "Operative Surgery", third edition, by J. Shelton Horsley; C. V. Mosby, publishers, St. Louis; 893 pages; 756 illustrations by Helen Lorraine.

A decided increase in the number of patients was noted during the year, there being a total of 1,355 admitted in 1928, as compared with 1,228 in 1927. Of these 1,355 patients, there were fifty deaths, making a general hospital mortality of 3.69 per cent.

Statistics of the out-patient department show a marked increase of visits during 1928 over all previous years; the total number of out-patient visits for 1928 was 2,684. There were 14,020 laboratory examinations, showing a marked increase in this work also.

In October, 1928, an annex was added to the hospital, allowing an addition of twelve beds, more spacious quarters for medical illustration, for the hospital library, and for filing of records. A laboratory for a consulting bacteriologist was established, with Mr. Aubrey H. Straus, as director.

United States Honors Virginia Health Officer.

Dr. Robert P. Cooke, Lexington, Va., now health officer for Rockbridge County, has just received a Congressional gold medal for dis-

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tinguished service. This is a delayed recognition of an act of outstanding heroism.

When Dr. Walter Reed was starting his investigation of the causes of yellow fever and its methods of transmission, he was compelled to use volunteers to disprove or to prove certain factors. At that time the great majority of people thought that the disease was carried by contact. If that theory could be proved a great step would have been taken; if that theory could be disproved much time would be saved.

Dr. Cooke was one of the small group who offered to sleep in the uncleaned hut of a man who had died of yellow fever. The outcome of this heroic experiment and the subsequent study of the mosquito as a carrier gave to Dr. Reed the information upon which is based the campaign which is ridding the world of yellow fever. These experiments were conducted in Cuba in 1900.

Our New Volume

With this issue, we commence our fifty-sixth year of continuous publication. The success with which we have met has been due largely to the cooperation of our members and contributors, and we thank you for your kindly interest.

In addition to much splendid reading matter, we have been carrying a number of A-1 advertisements. These are the financial backbone of the MONTHLY and once again we urge our readers to look over the advertising pages each month. In writing advertisers, please state that you read of their products in the VIRGINIA MEDICAL MONTHLY. It helps us and pleases them to know how you became acquainted with them.

In this issue, we have started a department known as "Medical News of the Past." We hope to have this from time to time and will appreciate information furnished by readers.

Dr. and Mrs. M. Pierce Rucker,

Richmond, recently enjoyed a visit to Daytona, Fla., having motored there with friends.

Dr. John M. Biedler

And his mother, of Harrisonburg, Va., recently suffered minor injuries in an automobile accident on the Washington-Richmond Highway, while on a motor trip.

Child Labor in China.

The total number of child workers in modern industrial establishments in China has recently been estimated by a Chinese student to be well over a million. Many of them are very young. They work from twelve to sixteen hours a day for wages ranging from six to twenty cents a day. Textile, tobacco, and candy factories, hat shops, toy shops, and book binderies are among the industries commonly employing children.

Birth.

Mr. and Mrs. J. C. Grigg (Dr. Ruth Mason Grigg), Petersburg, Va., announce the birth of a daughter, Cecilia Spottswood, on March the 25th.

Dr. J. B. Muncy.

Of Jonesville, Va., is in Philadelphia, where he is taking post-graduate work in gynecology and obstetrics at the University of Pennsylvania, Graduate School of Medicine.

German Baederkalander

The Cunard Line has received a supply of the German Baederkalander, a scientific reference book on German health resorts and sanataria, a book helpful to physicians and medical students going to Europe, especially to Germany.

This booklet can be obtained gratis from The Cunard Line, 25 Broadway, New York.

Tulane University's Behavior Clinic.

A behavior (child-guidance) clinic has been established in connection with the school of social work of Tulane University, New Orleans. A behavior clinic examines a child to discover the causes of his misbehavior or mental difficulties and advises the parent or teacher as to how best to help the child to overcome them. In other words, it does for the mind of a child the same sort of service that a child-health clinic does for his body.

Dr. Wilbur M. Phelps,

Staunton, Va., Colonel, Medical Reserves, commanding 305th Medical Regiment, was elected president of the Department of Virginia, Reserve Officers' Association of the United States, to succeed Dr. Junius F. Lynch, of Norfolk, Colonel, Medical Reserves, at the State Convention, held in Richmond, March 16th.

Dr. J. B. Dalton

Has returned to Richmond, Va., and reopened his offices at 1100 West Franklin Street. He is now limiting his work to orthopedics.

Special Radium Number.

In March, 1928, *Radiological Review*, of which Dr. Harold Swanberg is managing editor, published a RADIUM NUMBER, in honor of the 30th anniversary of the discovery of that element. The comments were so appreciative that the *Review* has just published its SECOND RADIUM NUMBER. This issue contains contributions from some of the foremost radium therapists of America, and virtually records the present status of radium therapy. The *Radiological Review* is published in Quincy, Ill.

Appointed to Professorship at Duke University.

Dr. Harold L. Amoss, for the last seven years associate professor of medicine at Johns Hopkins University, Baltimore, has been appointed professor of medicine at Duke University School of Medicine, Durham, N. C., and will enter upon his duties there in 1930. Dr. Amoss is a Kentuckian by birth and a graduate of the University of Kentucky and Harvard Medical School. Before going to Johns Hopkins he was for ten years connected with the Rockefeller Institute in New York City.

New Medical Building at University of Virginia.

The University of Virginia's new medical building will be completed during April, but its formal opening will not take place until October when the Medical Society of Virginia meets in Charlottesville, according to Dr. James Carroll Flippin, dean of the Department of Medicine in the University.

Tuesday, October 22nd, is the date set for the ceremonies in connection with the dedication of the new laboratories. This is the first day of the meeting of the Medical Society of Virginia, which will continue its sessions through October 23rd and 24th.

Part of the new building is already in use. The enlarged out-patient department is quartered on the ground floor of the front wing which connects with the Steele wing of the older hospital building and increases the floor space available for the treatment of these patients about threefold.

The school of clinical pathology under Dr. William E. Bray has also moved into new quarters on the third floor of the central wing. This early change was made necessary in order that laboratories formerly used by Dr. Bray might be converted into a new hospital ward.

By the end of April all the offices of the administrative and teaching staff of the medical school will be moved into new places. During the early summer the medical library will be brought down from the rotunda basement to the new stack rooms that are being made ready, in connection with spacious reading rooms and study rooms.

Not all of the laboratories will be moved into the new building before the end of this session, but this will probably be done by midsummer in time for the vacated quarters to be remodeled for other uses before September.

Dr. William H. Goodwin, professor of surgery, representing the University, and Dr. Lawrence T. Royster, professor of pediatrics, representing the Albermarle Medical Society, have been appointed chairmen of two committees working jointly on plans for the formal opening.

Something more than $1,400,000 has been spent on building and furnishing the new medical group and on other construction made necessary by the enlargement of the space for the teaching of medicine.

Dr. Mortimer H. Williams

Has returned from Europe, where he was doing post-graduate work and is again located in Shenandoah Life Building, Roanoke, Va., where he is limiting his practice to diseases of the eye, ear, nose and throat.

Dr. Charles R. Woolwine,

An alumnus of the Medical College of Virginia, recently of Davy, W. Va., is now in charge of the medical work at the Virginia Polytechnic Institute, Blacksburg, Va.

Dr. I. R. Wagner,

Member of the Medical Society of Virginia, has been transferred from Jefferson Barracks, Mo., to the U. S. Veterans' Hospital, Tucson, Ariz., where he is medical officer in charge.

The American Proctologic Society

Will hold its annual meeting in Detroit, Mich., May 13th-15th, under the presidency of Dr. Edward G. Martin, of that city. Any reputable medical man will be welcomed as a guest at this meeting upon payment of the registration fee of $5.00. This Society is the only organization of medical men who limit their work to the treatment of ano-rectal and colonic disease. For further information, write

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the secretary, Dr. Walter A. Dansler, 531 La Salle Building, Minneapolis, Minn.

American Otological Society Seeks $2,500,000 to Prevent Deafness.

A plan, world wide in scope, for research into the cause, cure and prevention of deafness has just been announced by the American Otological Society. While a fund of $2,500,000 will eventually be sought to finance the complete plan, an immediate campaign to raise $500,000 by July 1st and thus continue a program of research started through a grant by the Carnegie Corporation four years ago, has been started. The campaign was launched at a dinner given at the New York Academy of Medicine by the Board of Trustees of the Research Fund on Tuesday, March 12th, to a group of interested laymen and physicians.

It was stated that gifts of $125,000 had been pledged on condition that the remainder of a half-million dollar fund be raised by July the 1st. The income from this fund will be used to continue work begun in June, 1926, under a grant of $90,000 by the Carnegie Corporation. This sum was given to begin and partially finance for five years a program of continuous and correlated research in otosclerosis, the hereditary form of chronic progressive deafness.

Medical News of the Past.

Having become much interested recently in looking up information to answer an inquiry about the first State Board of Medical Examiners, we have decided to include in the MONTHLY a department with the above heading. It occurred to us that it might prove interesting to publish in this department, from time to time, facts about medical matters which have happened ten or more years ago. Other inquiries may be "lead strings." Let us hear from you.

Supervised Recreation Decreases Juvenile Delinquency.

The records of the Philadelphia juvenile court show a large amount of delinquency among Negro boys, but practically no Negro boys were brought before the court from a district of the city, where a Negro boys' club has been active for twenty-five years. The club now has a membership of 1,200 and owns a clubhouse valued at $60,000, which is equipped with a gymnasium, swimming pool, game rooms, and rooms for classes in cooking, carpentry, sign-painting, photography, and various other subjects. It also owns a camp with accommodations for sixty boys, where vacations have to be limited to periods of one week because of the number of applicants.

The Southside Virginia Medical Association

Held its last quarterly meeting at the Southside Community Hospital in Farmville, Va., March the 12th, with a large attendance. A very interesting program was given and all papers were freely discussed. Following the scientific session, the visiting physicians were entertained at a delightful dinner at the Hospital. The next meeting is to be held on the second Tuesday in June. Dr. R. H. Manson, McKenney, is president, and Dr. R. L. Raiford, Franklin, secretary-treasurer.

The American Climatological and Clinical Association

Is to hold its annual meeting at the Chamberlin-Vanderbilt Hotel, Old Point Comfort, Va., May the 2nd, 3rd and 4th, under the presidency of Dr. J. Woods Price, of Saranac Lake, N. Y. The sessions will prove of interest to those who can attend.

Dr. H. Colles Grant

Has located at 165 Madison Lane, University, Va., where he will be engaged in the practice of medicine and surgery.

Venezuela's New Labor Law.

The employment of children under fourteen in industrial establishments is entirely prohibited by the new general labor law enacted by Venezuela in July, 1928. Minors over fourteen but under eighteen may not be employed for over six hours a day in two three-hour periods separated by a rest of at least one hour; their employment in mines and foundries, on work dangerous to life and health, and on night work—between 6 P. M. and 6 A. M.—is also forbidden. The night work prohibition also applies to all women. No woman and no boy under twenty-one may be employed in an occupation that may be morally harmful. Expectant mothers may not engage in work likely to be injurious to them, and nursing mothers must be allowed two daily periods for feeding their infants, without deduction from their wages.

Dr. Theodore M. Trousdale,

For a time located at Richlands, Va., is taking post-graduate work in diseases of the eye, ear, nose and throat at Long Island College Hospital, Brooklyn, N. Y.

To Address Chemical Society.

Dr. Ellice McDonald, chairman of the Cancer Research Fund, University of Pennsylvania, Graduate School of Medicine, Philadelphia, will address the Virginia Section of the American Chemical Society at its meeting in Richmond, April the 12th. This meeting will be held in Room 209 of the Medical College of Virginia. Dr. McDonald's subject is to be "Chemical Aspects of Cell Division in Relation to Cancer." All readers who are interested in this subject are invited to attend.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for senior bacteriologist, applications to be on file with the Service in Washington, D. C., not later than April 24: also for associate medical officer and assistant medical officer, and for physician and associate physician, applications for these to be rated as received in Washington until June 29.

Married.

Dr. James Frank Folk, Warrenton, Va., and Miss Rose Henrietta Hall, Richmond, Va., March 28th.

Dr. Joseph Arthur Gallant, Richmond, Va., and Miss Ethel Price, of Montreal Canada, February 21st.

Dr. John B. Fisher,

Midlothian, Va., was elected president of the Chesterfield County Protective Association, recently organized for the protection of game in that county.

Decrease in Juvenile Court Cases in Belgium.

The juvenile courts of Belgium handled 11,000 cases in 1927, a decrease from nearly 17,000 cases handled in 1913. This decrease especially noteworthy since 1920, has been attributed to improved economic conditions among the working classes, decrease in the birth rate during the war, and provision for probation and other measures to prevent and correct juvenile delinquency. A follow-up study of nearly 10,000 former delinquents showed that up to the age of 26 at least 82 per cent had had no further conflict with the law. The Belgian juvenile court has jurisdiction over young people up to the age of 21.

University of Virginia Clinics.

The University of Virginia, Department of Medicine, announces that it will renew its clinics for doctors of the State and that the next course of clinics will be held May 2nd, 3rd and 4th, and will be largely a Therapeutic Clinic. Further information may be obtained from the University.

Dr. Blanton Page Seward,

Formerly of Richmond, Va., but now associated with the Lewis-Gale Hospital, Roanoke, Va., was recently elected a fellow of the Royal Society of Medicine of England. There are few members of this Society in the United States and Dr. Seward is the only one from Virginia.

The Martin County (N. C.) Medical Society

Held its regular annual meeting on March the 14th, in Williamston, N. C. Dr. William E. Warren was host to the members, all of whom were present. This was a most interesting and instructive meeting and Dr. Warren was elected delegate from his society to the Greensboro meeting of the Medical Society of the State of North Carolina, to be held April 15-17. Dr. V. A. Ward, Robertsonville, was elected president of the Martin County Society for the coming year; E. E. Pittman, Oak City, vice-president; and Dr. Wm. E. Warren, Williamston, was re-elected secretary.

Good News About Pennsylvania Children.

In Pennsylvania the death rates from all the epidemic diseases of childhood have been greatly reduced, says the State department of health. In proportion to the child population under 5 years of age in the State only about one-sixth as many children in that age group died from measles in 1927 as died 20 years ago; the deaths from scarlet fever were only about one-seventh, those from diphtheria and whooping cough had been reduced to nearly one-fourth, and those from tuberculosis to approximately one-third.

Dr. Raymond A. Vondelehr,

Formerly of Richmond, Va., and a member of the Medical Society of Virginia, has been promoted and commissioned in the grade of Passed Assistant Surgeon in the Regular Corps, effective April 10, 1929.

New Devilbiss Officials.

Following the death of Mr. Thomas A. Devilbiss, of Toledo, O., late president of the Devilbiss Company, manufacturers of medicinal nose and throat sprays, the following officers of the Company were elected: President, Allen Cutchess, nephew of Mr. Thomas A. Devilbiss, who has been associated with the firm for many years. Other officers

are Frank Bailey, vice-president and general manager; Frank C. Penoyar, secretary; Walter W. Conklin, treasurer; Howard Devilbiss, son of the late president, assistant secretary; William F. Gradolph, general sales manager.

To Enlarge Physiotherapy Department.

While it was doing physiotherapy previously, Stuart Circle Hospital, Richmond, Va., in July, 1928, opened a separate department devoted exclusively to this work, Dr. Mark W. Peyser being put in charge of this department. Although Dr. Peyser, on a recent inspection of this work in Washington hospitals, found that by comparison the equipment at Stuart Circle Hospital was modern and sufficient and their technic advanced, this hospital plans to enlarge its physiotherapy department in the near future so as to meet the increased demands for this service.

Dr. Charles C. Carr,

Formerly of Toms Creek, Va., has moved to Elizabethton, Tenn., for the practice of his profession and has offices in Dungan Arcade.

The Sofie A. Nordhoff-Jung Cancer Prize,

For the best work in the last years with regard to cancer investigation, has been unanimously awarded by the Commission to Professor Dr. Katsusaburo Yamagiwa, pathologist of the University of Tokyo. Professor Yamagiwa and his co-workers have founded and developed the technic of creating nearly absolutely sure cancer experimentally on animals by tarring their skin and making injections of tar in the breast. Extensive literature has been published on this work. In addition, Professor Yamagiwa has done most ingenious research work on the origin of tumor cells and has given very important information concerning the method to advance and check the growth of tumor cells.

The Commission was composed of Professors Borst, Doderlein, v. Romberg and Sauerbruch.

The Tidewater Medical Society

Is to hold its next meeting at Mathews Courthouse, Va., Wednesday, April the 24th, at 11 A. M. A large attendance is urged. Dr. Hawes Campbell, Enfield, is president, and Dr. Malcolm H. Harris, West Point, secretary.

$1,000,000 for a School of Nursing.

The endowment of $1,000,000 given by the Rockefeller Foundation to the Yale School of Nursing is a gift of great significance, since it places on a stable and permanent basis an educational program which offers professional training for nurses comparable with that offered for the professions of medicine, law, and engineering. More than one-half of the 116 students enrolled already hold college degrees.

Dr. P. E. Tucker,

Buckingham, Va., is spending sometime in New York City, where he is taking up special work in general medicine and diseases of children. He will return home early in July.

Technician.

Graduate technician wishes position in hospital laboratory or to do laboratory work for a group of physicians. Aged thirty-five years; widow, college education. Excellent references. P. O. Box No. 343, Clifton Forge, Va. (Adv.)

Obituary Record

Dr. John W. Wallace,

Prominent physician of Covington, Va., died in Charlottesville, April the 1st. Dr. Wallace was a native of Bath County, Va., and sixty-one years of age. After attending the Virginia Polytechnic Institute at Blacksburg, Va., he studied medicine at the University of Maryland, graduating from that school in 1891. He later took up post-graduate work at Johns Hopkins University. Dr. Wallace had been a member of the Medical Society of Virginia since 1891. He was also prominent in Masonic circles. He was thrice married and is survived by his widow and two children by his first marriage.

Dr. Frederic C. Tice,

Roanoke, Va., died February the 10th, at the age of seventy-one years. He was graduated in medicine from the Jefferson Medical College, Philadelphia, in 1879. Dr. Tice had been for some time a member of the Medical Society of Virginia.

Dr. Isaac Tripp Gorsline,

Richmond, Va., died March the 12th, at his home in this city, after a short illness. Dr. Gorsline was born at Bethel, Ontario, Canada, in August, 1870, and received his academic education there. He later studied medicine at the Medical College of Virginia, Richmond, and received his diploma from this school in 1905. He had since practiced in this city and was at one time a member of the Medical Society of Virginia. His wife and four children survive him.

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